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Scoring Sounds: the Visual Representation of Music in Cross-Cultural Perspective

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Abstract

This thesis argues that a performer's relationship with a musical score is an interaction largely defined by social and cultural parameters, but also examines whether disparate musical traditions show any common underlying tendencies regarding the perceived relationship between musical sound and visual representation. The research brings a novel, cross-cultural perspective to bear on the topic, combining a systematic, empirical study with qualitative fieldwork.

Data were collected at five sites in three countries, involving: classically-trained musicians based in the UK; traditional Japanese musicians both familiar and unfamiliar with western standard notation; literate Eastern Highlanders from Port-Moresby, Papua New Guinea; and members of the BenaBena tribe, a non-literate community in Papua New Guinea. Participants heard short musical stimuli that varied on three musical parameters (pitch, duration and attack rate) and were instructed to represent these visually so that if another community member saw the marks they should be able to connect them with the sounds. Secondly, a forced-choice design required participants to select the best shape to describe a sound from a database. Interviews and fieldwork observations recorded how musicians engaged with the visual representation of music, considering in particular the effects of literacy and cultural parameters such as the social context of music performance traditions.

Similarities between certain aspects of the participants' responses suggest that there are indeed some underlying commonalities among literate participants of any cultural background. Meanwhile, the overall variety of responses suggests that the association between music and its visual representation (when it takes place) is strongly affected by ever-altering socio-cultural parameters.

Contents

List of Figures

List of Tables

List of Graphs

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Introduction

During my Masters thesis I created a selection of rather abstract John Cage-looking graphic scores for a quartet made up of a flutist from Taiwan, a guitarist from England, a violist from the United States and a Chinese pianist. Being a performer myself, I expected that communication would not be difficult with the quartet, since I had written detailed directions on the scores. The scores were based on controlled improvisation; they made use of different colour hues, densities and shapes. It all went down quite smoothly.

Then, out of sheer curiosity, I took the same scores and on my next visit to Greece that winter and handed them over to a school friend of mine, Basil, who was a keen bouzouki player. Taking a brief look at the guitar part of the graphic scores, he looked at me with a smile:

'Τι διάολο είν'τούτο; Έβαλες κανα δίχρονο να κάνει μουτζούρες και μου το πουλάς σαν μουσική; Αυτά σου μαθαίνουν εκεί πέρα;' (What is this? Did you ask a two-year old to scribble some nonsense and you're trying to sell this to me as music? Is this what they teach you there?')

'Just try to do whatever you think with it', I told him. Basil picked up the bouzouki and proceeded to improvise on what he thought best fitted the Cage-an graphic score in front of him, in a rather organised manner and full of stylistic folk musical references.

Later on that night, we went to a taverna with a large group of friends. The Greek taverna is the equivalent of the pub in Britain: cheap food, wine, mezedes, and usually a couple of musicians sitting informally at a table, playing Greek folk songs. The musicians would often play 'requests' from customers provided that they would buy them a drink or give them some money. One of my friends who knew them personally approached them and asked if they could play something for me, with a more 'international' flair. As a teenager I used to listen to Heavy Metal and I was not very keen on Greek folk music. The musicians, a guitarist and a bouzouki player, after a small discussion between them, took out a notebook. The bouzouki player retuned his instrument, and the two of them started playing an incredible rendition of Dave Brubeck's Take Five, followed by AC-DC's Hell's Bells. I was speechless.

After they finished playing, I went to talk to them and asked if I could have a look at their scores: the guitar player had it all written down in chord progressions, whereas the bouzouki player had both songs written for an eight string bouzouki tablature by hand. I asked the bouzouki player: 'Where did you get this?' He said: 'I listened to the songs many times, and worked it out. When we play I don't look at them though, I get confused. I only have it as a rough guide'.

At that point an idea entered my mind so strong that it would define this PhD thesis. Cultural fusions were not unknown, as anyone who has heard AC-DC being performed by bagpipers on Edinburgh's High Street tourist shops would know. What about the written part though? Does our culture define how we read a musical score, translate it as sound and turn it into music? Has our culture defined which elements of music are worth putting on paper, and - if culture were put aside - would all performers have the same perception regarding how to read music, or to produce musical scores / directives?

A starting point

Are there universal principles governing music, and if so, how would these principles function? Through various studies of the Venda tribe, John Blacking reached the conclusion that a universal musical grammar might exist. He furthermore claimed that 'there seem to be universal structural principles in music, such as the use of mirror forms, theme and variation, repetition and binary form'.[1] What about the written form of music? Is it universally perceived as taking a specific form - for instance, an analogue form of western standard notation? What rules govern the transcription of a sound event into its textual representation? Could universal structures arise there, too? Are they already in place? Or would they be culturally relative? After all, writing systems exhibit considerable cross-cultural variation, as well as some commonalities across cultures.

[1] Blacking J. (1973). *How Musical is Man?* University of Washington Press (February 1, 1990) reprint from 1973, p.112.

If the capacity for musical communication is comparable to the capacity for human speech, the matter in question is to see whether behind all the differences in the cultural understanding of music lies a common perceptual background. The next step would then be to expose this common background, and see if it resembles any known notational system in existence. In order for this investigation to proceed, I started formulating hypotheses that could test and obtain measurable results to either support or disprove my arguments. The first hypothesis formulated during my Masters on Composition at the University of Surrey, proposed that musicians with a common cultural and musical background would approach and interpret graphic scores in a similar fashion to one another, and a resulting experimental investigation successfully tested this. Following this rhetoric, I came to the University of Edinburgh to pursue a PhD in music semiotics with Prof. Raymond Monelle as my main supervisor. However, during the beginning of my second year of study it was obvious that I could no longer work with Professor Monelle, as his progressing illness made it impossible for him to continue supervision of my thesis. Dr. Nikki Moran, my secondary supervisor, became my principal supervisor, assisted by Professor Simon Frith. This change proved to be the beginning of a very fruitful collaboration with both Dr. Moran and Prof. Frith - it also meant a move away from music semiotics and an acquisition of a new perspective for my investigation, based primarily on ethnomusicology, music sociology and music psychology. More weight was put towards the cross-cultural aspect of the investigation.

What this research is and is not about: Chapter contents

After this change in viewpoint, my work now focused mostly on how non-Western music literate / non-literate performers engage with the textual representation of music in relation to their culture, and the extent to which musical representation is culturally-specific, or depends on underlying universal traits. Upon returning from my fieldwork, I re-evaluated my goals. I recognised that I had in my hands an investigation dealing with the visual representation of music in a cross-cultural perspective which suggested that musical representation is related to our complex

perception of symbolic meanings rather than be the result of cognitive perception alone. I decided to pay central attention to cultural differences among participant groups; in setting my new aims, I try to make a point early on that my method is not result-driven, at the cost of ecological validity. Music Psychologists would be right in pointing to a lack of experimental rigour, as I cannot control certain parameters considered essential if the quantitative part of my work were to be replicated. However, I must emphasize that strict experimental psychology dialectics have little place when conducting cross-cultural research which follows an ethnomusicological approach, since these tactics permit little cultural sensitivity towards their participants.

In Chapter One, I provide the rationale and bibliography that underpin my field of research. Relevant work from music psychology and ethnomusicology is presented as an indication of what already exists in terms of research, rather than as guidelines for my exploration. I also discuss problems between cross-cultural and cross-disciplinary studies, as different currents in psychology research would suggest different methodological approaches, which may not necessarily be compatible with ethno-musicological fieldwork practices. Furthermore, I present philosophies behind musical notation (used here to include all instances of the textual manifestation of music).

In Chapter Two, I discuss the procedure of developing my method, drawing upon both disciplines of ethnomusicology and music psychology, and I also present the participant groups taking part in this study: native British classically trained musicians; Japanese traditional musicians; classically trained Japanese musicians; Papua New Guinean highlanders living in Port Moresby, familiar with western music and notation; the BenaBena tribe, a non-literate community in the Eastern Highlands Province of Papua New Guinea. The advantages behind selecting these specific groups in favour of others are made obvious for this sort of cross-cultural investigation. I also present my method of analysing my qualitative data, which is a personal adaptation of the Symbolic Interaction theory as an interlude to Chapter Four.

Chapter Three provides the reader with the results from the quantitative part of the study, highlighting tendencies in responses where these appear.

In Chapter Four I elaborate on performer tradition and their relation with music in textual form, based on the theory of Symbolic interaction and the communication model by Tagg (1999) as presented in Chapter One. Focusing on the role of music and its notation, I discuss issues of authenticity and symbolism in an effort to explore the subtleties of subjective, inner views from performers towards their music. The reader may find this slight change of perspective, from the broad relationship of music and its visual representation in a non-formalised manner to the more focused relationship of music and its 'organised' method of representation (musical notation), strange. This change occurred naturally, as participants originating from literate cultures themselves provided responses that were characterized and described by themselves in terms of 'invented notation', and 'pictorial notation'. This shift however, could be considered problematic when trying to 'label' the drawings from BenaBena community, who, as a non-literate culture, provided responses of an iconic nature, which would not and should not be seen as notation, but as a broad, visual representation of musical sound. Still, even under those terms, the BenaBena participants' unique responses did incorporate elements of organisation at iconic level, as will be discussed in Chapter Five.

In Chapter Five I attempt to 'make sense' of the quantitative and qualitative data presented in Chapters Three and Four from all fieldwork locations, further analysing the relation between music and its visualization, musical scores, performers and composers. By doing so, I touch upon issues of functionality, ownership and politics, among other parameters that seem to affect the relationship between music, its broad visualization through shapes, and its 'formalised and organised' visualization through musical scores.

In Chapter Six I present what I hope to have achieved with this piece of work: a better understanding of the scoring of sounds: a cross-cultural perspective on how music is visually represented in broad terms. I also indicate potential routes for further investigation - as well as alternative methods of research for this work, new investigations being carried out, and my limitations and weaknesses.

Ethics Statement

All projects require ethical consideration. In this investigation, I approached ethics in a systematic manner by developing an ethics protocol presented below, completed a Level 1 Self-Audit Ethics Checklist for the School of Humanities and Social Sciences, and took particular care to address the unbalanced position of power I had as an investigator in relation to all participants, particularly those originating from a non-literate culture. In order to enhance my abilities in the field and familiarise myself with ethical research conduct during fieldwork, I attended a course offered from the University Of Edinburgh School Of Cultural and Social Anthropology entitled Qualitative Methods and Ethnographic Fieldwork (QMEF) in 2009-2010. I also attended the Research Methods Module offered to first year Postgraduate students from the University of Edinburgh School of Humanities and Edinburgh College of Arts in 2008. Part of both courses dealt specifically with ethical conduct during research. The QMEF course dealt specifically with ethical conduct during qualitative fieldwork investigation, while the Research Methods Module from the University of Edinburgh / Edinburgh College of Arts dealt with ethics during research in a holistic perspective.

For this investigation, I separated ethics into the following categories: i) risk to, and safety of researchers ii) risk to, and safety of participants iii) data protection and participant consent iv) research design.

i) Risks to, and safety of, researchers.

The Foreign and commonwealth Office regarded Japan as one of the safest places worldwide, during the period that the fieldwork research in relation to this project was conducted (May – June 2010). Papua New Guinea was affected by serious crime, especially in the capital (Port Moresby) and it was advised to pay close attention to personal safety. This risk was mitigated by establishing contacts in Papua New Guinea prior to my arrival through the University of Papua New Guinea, where members of staff from the Department of Arts provided escorts and translators. The

Foreign and Commonwealth Office further advised that 'although outbreaks of tribal fighting are common…foreigners are not normally targeted'. The potential danger of being caught in a tribal fight was also assessed, and because of this I did not conduct my research in the original location (among the Huli in South Highlands Province) due to the on-going fight between the latter and a natural gas company. Instead I conducted my fieldwork among the BenaBena, in the Eastern Highlands region, as advised by my contacts from the University of Papua New Guinea (for more detail see Chapter 6.3.4).

ii) Risks to, and safety of, participants.

One aspect of ethics I took particular consideration in relation to this project was to make sure that the research would not induce any psychological stress or discomfort, as these would work against the directives of this investigation. Participants were made as comfortable as possible with the investigation procedure and the follow-up interview through two briefing sessions: the first, during my first arrival at each community, the second prior to the beginning of each individual session with every participant. During the briefing sessions, the nature of the investigation was made apparent to individuals taking part: it was noted to the participants that 'there is no correct answer,' ensuring they understood that all answers were perfectly acceptable, and that there was no possibility of providing an unsatisfactory response.

Another crucial aspect was to foresee how this research could adversely affect participants in any other way. The research project introduced the idea that music can be communicated via written form into a predominantly non-literate culture, where literacy in language has been adopted only recently by younger members of the community, and musical notation is unheard of. Therefore, there was a small chance that research experience may have been uncomfortable simply because of its novelty. This was mitigated through the research design, which did not involve in demonstrating to or teaching the participants any method in how to provide answers; this would not be in accordance to the ethics procedure, and counter-productive to

the research goals. Part of this consideration was also to ensure that participants were fully aware of the goals and aspirations of the project; and that I, as the researcher, always acted with respect towards participating individuals and members of the community.

As the BenaBena participants were not overly exposed to Western culture, I was highly conscious of my self-conduct in relation to the project and my overall behaviour in general so as not to alienate the participants, maintain a neutral relationship regarding the participants' own cultural practices, and ensure that the research would have no adverse effect on the participants' life and culture during my presence and after my leave.

iii) Data protection & participant consent

As some part of the research involved audio, film or video recording of individuals, participant consent was always requested .No participant was recorded in any digital form without their full consent. Participant consent was sought during the briefing session prior to each interview. This project was based on freely given informed consent of the participants taking part - participants were made aware of their right to refuse participation whenever and for whatever reason they wished.

Information was anonymised, via providing participants with alternative names, apart from those who wished to be named for this project (such as my guide in Papua New Guinea, Mr. Prutson, and my bodyguard, Mr. Asili). Steps were taken so that the information collected would not be identified to individuals and there would be no reasonable basis that the individual could be identified from the information they gave during the research.

iv) Research design

In order to conduct ethical and reliable research, protocols for conducting culturally sensitive communication with each participant group were developed at an early

stage of the research project. This pertained to aspects such as: style of briefing sessions; choice of remuneration/compensation for participation; and structure and design of recorded consent.

Inclusion/exclusion of participants was be based on: i) whether an individual considered himself/herself to have specific skills on any musical instrument, or relative experience in musical performance and ii) whether or not s/he was acquainted with any form of musical notation iii) whether or not s/he was language-literate. Participants were recruited with the assistance of local academic institutions (Kyoto City University of the Arts; Tokyo Geijutsu Daigaku; University of Papua New Guinea) and local guides (Mr. Prutson – Primary contact in fieldwork location/translator amongst the BenaBena tribe).

According to the details of the protocol for each group (United Kingdom, Japan & Papua New Guinea), one to two briefing sessions took place: the first one with all participants prior to the investigation at a community level (when I first arrived at the fieldwork location; relevant in Japan and Papua New Guinea), the second at individual level (prior to each individual interview session at all three fieldwork sites). During these sessions I explained in full detail, and in terms meaningful to the participants, what the research was about, who was undertaking and financing it, why it was being undertaken, and how it was to be disseminated and used.

Participant consent was sought verbally in Japan and Papua New Guinea, as traditional Japanese musicians, and Papua New Guineans, may have been alienated to the task should written consent have been asked for, as it is not part of their cultural practice. Written consent was sought in the United Kingdom.

In the case of participants whose first language is not English (as in Japan and Papua New Guinea), I requested the assistance the local guides/translators in order to obtain informed participant consent, as well as explain in full all aspects of the research. The form in which the participants were compensated for their time was decided according to the protocol for each group, taking into consideration the needs of the participants, as well as the local cultural norm of gift exchange (see Chapter 6.3.2).

Chapter 1: Towards Visual Representation of Musical Sounds

1.1. Initial hypothesis

Musicians with a common cultural and musical background would approach and interpret graphic scores in similar fashion to one another.

This was the starting point mentioned in the introduction - as it was formulated in my Masters degree in 2008. My goal was to see whether individuals originating from a common cultural and musical background would interpret graphic scores in similar fashion to each other, without any assistance from conventional music symbols in any of the scores, nor any performance guidelines - even as to how to place the score on the stand. 'Potential' music, as it had been my goal, would have to be the outcome of the performers' cultural and musical semiotic blend.

In order to verify this hypothesis, I conducted a small scale experiment at the University of Surrey in 2008.[2] The participants were University level music students, the majority of whom originated from Great Britain; thus I had the ability to modify my sample to exclude non- British participants. The graphic scores, used as stimuli, did not include any annotations or restrictions to the performers and were so conceived that they could be performed by any solo instrument (Figure 1).

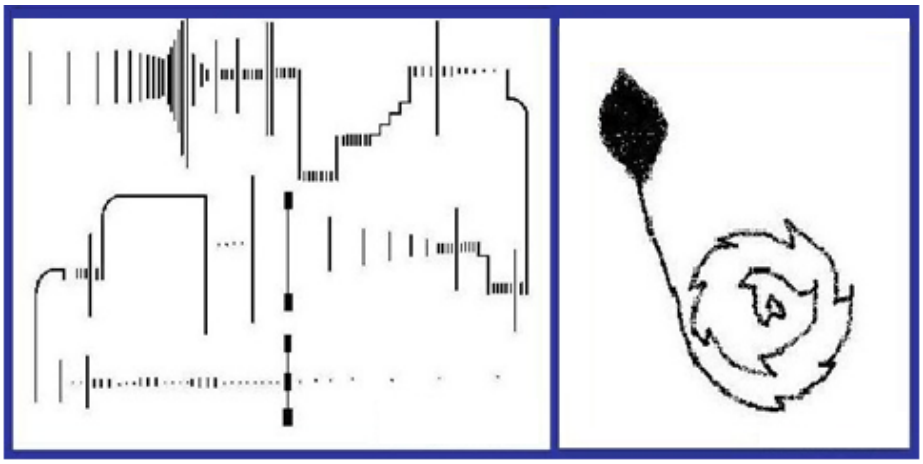

Figure 1: Bar Code - Spiral, 2008

[2] Athanasopoulos, G (2009). Semiotic Approaches to the Representation of Music, in *Before and After Music*. Acta Semiotica Fennica XXXVII, pp.299-308.

The patterns that emerged from the performances of both scores were the following: All musicians read the above graphic scores in a left-to-right fashion. This could be easily explained since Western Standard Notation (henceforth WSN) is read in such a way as mimicking Western alphabets, which also follow a left-to-right directionality of script. Although only a hypothesis, it would be expected that the graphic scores, presented in Figure 1, would be read following existing conventions regarding directionality, spatial height, and colour hue. At the time, I was largely unaware of existing bibliography on close-related issues seen from a different perspective than that of the performer: the majority of this work on the association between music and imagery (as presented in following sections of this chapter) are from the perspective of the listener. Cognitive science has also a lot to offer in this area. However, it did not fall within the scope of that early investigation at the time to explore *how* performers think.
Cumulatively, the following conclusions were drawn from this first hypothesis and subsequent experimental procedure:

- If the graphic score were to be set on a system of Cartesian axes, the position of notes/graphemes on the y axis in the scores were linked to pitch.
- The depth/intensity of the colour/graph was associated with loudness.
- Widely spaced material was interpreted as slow tempo, whereas closely spaced material was perceived as quick tempo.

The results of the experiment suggested that similarities between performances of graphic scores from musicians sharing a common cultural and musical background could not be coincidental.

Intermediate hypothesis

The next step after that small-scale investigation in Surrey was to attempt to formulate a hypothesis to include the rest of the musical world and not restrict it to Western culture. In the remote case that inter-cultural similarities did appear, I had

the notion of proposing that universal and unarticulated music semiotics of the most primal form exist: a world of pre-symbolic gestures and desires, as suggested by the discipline of Existential semiotics.[3]

If I managed -somehow- to remove the otherwise strong aspect of WSN and examine participants who are from a non-literate culture, as well as participants who use a music representation system other than WSN, perhaps I would be able to detect how musical sound is perceived by and through the use of icons or symbols (see 1.3 – Terminology and Axioms). I imagined and expected that these icon-symbols would work in the same way as graphic scores that avant-garde composers from the contemporary era of western art music had introduced; not as a direct dictation of the sounds to be recreated from the score, but as a loose guideline that any performer can approach and recreate according to his unique cultural (linguistic and musical) background. In that sense, graphic scores/shapes would be used as a sort of anthropological touchstone, completely irrelevant to their cultural origins. They would work as a tool to reveal the cognitive aspects of different cultures, perhaps alongside their styles of existing modes of transforming sound into text, such as musical notation and linguistic writing. The essence would be to see how the musician's mind works when he faces the task of associating a sonic musical event with visual representation, and to see if this association has any connection with the musician's culture.

While in Edinburgh, I adopted a new perspective into the investigation, drawn mostly from music psychology and ethnomusicology. Subsequently, the idea as presented above remained intact in principle, yet it was re-cast into a new mould and in this shape it was formulated into two lines of investigation:

How do non-Western music literate / non-literate performers engage with the textual representation of music (in relation to their culture)?

And, to a certain extent, a question to be evaluated at the end of my thesis:

To what extent does musical representation exhibit culture-specific traits, and to what extent does it depend on underlying universal principles?

[3] Monelle, R. in Tarasti, E. (2002). *Signs of Music: A guide to musical semiotics.* Mouton de Gruyter, Berlin, New York, p.66.

My fieldwork in Japan, Papua New Guinea and the United Kingdom was carried out based on the above trail of thought. However, once the analysis of the qualitative data had begun, I decided to work on all fieldwork material (fieldwork notes, audio-visual recordings of traditional cultural events and performances, interviews with participants) with a more holistic perspective. Therefore, instead of pursuing a hypothesis and analysis based on hard-driven quantitative results, I became interested in *why* participants provided the answers they did on creating (or matching) auditory with visual stimuli, rather than in what these responses were.

1.2. What this research is about: visual representation within cultural context

In this work I hope to bring a novel cross-cultural perspective on the relation between music and its visual forms, whether these may be called notations or shapes, by combining a systematic empirical study with qualitative fieldwork based on observation and interviews. My main scope is to investigate the visual representation of music in a cross-cultural perspective, and demonstrate that musical representation is related to our cultural perception of symbolic meanings, rather than to cognition alone.

Two issues seem to matter the most for this area of human thought:

i) Musical communication and its relation to cognition, perception and culture.

ii) Musical communication and how it is made apparent through symbols in society.

Two lines of investigation will be followed in order to examine these two points: a systematic collection of quantitative information on how performers depict music visually, which is based on methods derived from music psychology and ethnomusicology. The recording of qualitative data will be carried out through semi-structured interviews and observation in order to contextualize results, based on the theory of Symbolic Interactionism. The quantitative data will be collected in the form

of a free-representation of musical stimuli as well the association of shapes with the latter in a forced-choice design, making this the first cross-cultural study using free representation which involves trained adult musicians. Before presenting relative existing material in these areas which have affected this research in the next sections, I will first provide a key for words and ideas that will be recurring throughout this thesis, as well as two axioms necessary in establishing my points.

1.3. Terminology and Axioms

As I want to make this work approachable to readers of all disciplines, I will now provide some relevant terminology so as to avoid confusion to those who may not be familiar with specific meanings from the world of semiotics.

Signifier is the form an idea takes, while **Signified** is the mental concept represented by the signifier, or it is what is understood in our mind by the signifier. By **Sign** I name any signifier which represents the denoted object as a direct relation. The term will be primarily used by how the sign stands for its object. By **Object,** I mean that which the sign encodes, or stands for. **Icon** is a sign that stands by its own quality in that it resembles the object directly. Here the signifier is thought to be imitating the signified idea by direct relation, such as looking like it as a portrait or a scale model, sounding like it in identical fashion, similar to onomatopoeia or 'realistic' sound effects, or imitative gestures. **Symbol** is a representation of an object where there is no factual connection or resemblance between itself and its object; the link is either arbitrary or conventional, therefore this relationship has to be learnt through culture.[4] By (music) **notation** and **score** I mean any writing system used to represent components of auditory music by deploying specific symbols. By ***S*core** I mean the composer's manuscript as a quasi-'sacred' text, usually not to be trifled with. **WSN** stands for Western Standard Notation, **JTN** for (any form of) Japanese Traditional

[4] For more information, read Peirce (1903 MS). Nomenclature and Divisions of Triadic Relations, as Far as They Are Determined, under other titles in *Collected Papers* (CP) v. 2, paragraphs 233–72, and reprinted under the original title in *Essential Peirce* (EP) v. 2, pp. 289–99. Equally significant is the work of Saussure F. (1993 edition). *Saussure's Third Course of Lectures in General Linguistics (1910–1911): Emile Constantin der snotlarından*, Language and Communication series, volume. 12, trans. and ed. E. Komatsu and R. Harris, Oxford: Pergamon

Notation, while **AGN** stands for Ancient Greek notation. **H-ltr** stands for horizontal, left to right representation, while **H-rlt** stands for horizontal, right to left representation. **G.A.** stands for the author, George Athanasopoulos. All other abbreviations and meanings will be given in the text.

As for the axiomatic propositions which follow: I feel it is necessary to justify why I am selecting to focus on specific events taking place while ignoring others. Axiomatic propositions are rules not to be put to the test, or proven true or false. They should be seen as a guide necessary to enable discussion and not as dogma. Description involves selection, and, as I wish to provide an opportunity for an open dialogue with possible readers, I wish to stress that my method of engaging aspects of communication (Symbolic Interaction) is only one possible way of many. By adopting the following axiomatic propositions, I hope that potential readers show patience as without them it will be impossible to elaborate on my methodological analysis in the chapters to follow.

First proposition: Organised human culture and society arose because i) it has made use in the past ii) is continuing to use iii) will continue to make use of - symbols for communication and for carrying meaning.

Second Proposition: Humans create or give meaning to symbols, and they are the only species with the ability to communicate *about* symbolic communication. Once established, these symbols are then adopted by society.[5]

1.4. Necessary traits for Communication

Regardless of which medium is used (visual, textual, and auditory) and despite any cultural similarities or differences, some similar traits appear in the main characteristics required for the transmission and reception of information during human communication as suggested by Jackendoff.[6] Below I indicate six of these essential traits with studies linking them to relevant research studies and empirical

[5] Very similar propositions have been put forward by Hugh Duncan. See Duncan, H.D. (1968). *Symbols in Society*. Oxford University Press, New York, pp. 43-62.

[6] Jackendoff, R. (2009). Parallels and Non parallels between Language and Music. *Music Perception* Vol. 26, Issue 3, pp. 195–204.

examples from the musical world: Memory capacity, ability to combine information, improvisation, expectation, imitation and social cohesion.

Firstly, without any means of a substantial **memory capacity**, communication seems rather difficult to achieve. The human mind functions in such a way that the capacity to store information is fulfilled by default and in any case, similar massive storage is necessary for the ability to function in harmony with our surroundings; from encoding the appearance of familiar objects and their appropriate use, the detailed geography of the surrounding environment as well as interactions with thousands of people—not just what they look like but also their personalities and their roles in one's social life.[7] In a world without memory, the second axiom (and in effect, the first axiom as well) cannot stand; symbolic meaning cannot be established, as there is no memory to link symbols and ideas long enough in order for them to be even evaluated by society. Still this capability on its own would not be adequate to achieve communication.

Secondly, the need to **integrate memorised information in a combinatorial fashion** is necessary in order to have meaningful transmission of information. It could be argued, at this point, that in the case of music improvisation this skill might not be essential. As saxophonist Steve Lacy points out: 'you have all your years of preparation and all your sensibilities and your prepared means but it is a leap into the unknown'.[8] However, this pool of the unknown really lies within users of the communication systems themselves; it draws its sources from the same material that is within the improvising performers, or dancers, or orators. On the other hand, when musicians are improvising they are usually playing within the bounds of a defined style as well as also audibly referencing established aesthetics. According to Nettl 'all performers improvise to some extent'.[9]

Third, the **ability to improvise** is as essential as the ability to combine elements within a communication template; musical parallels of improvisation and this combinatorial ability do not suggest incomprehensible screams or cries (if the

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[7]Jackendoff, R. (2007). *Language, consciousness, culture*. Cambridge, MA: MIT Press.

[8]Fischlin, D. (2004). *The Other Side of Nowhere: Jazz, Improvisation, and Communities in Dialogue*. Co-edited with Ajay Heble Wesleyan University Press: Music/Culture Series. p.145.

[9]Nettl, B. (1974). Thoughts on Improvisation, a Comparative Approach, *Musical Quarterly,* Vol. 60, No. 1 (Jan., 1974*),* pp. 1-19
p.19.

sociological template does not permit it), but a means of exploration within a specific mind frame. This frame can be limited to a musical style (i.e. Jazz) and can be extended as far as the performer's creativity with his instrument of choice. Roger Reynolds described the rules-based approach of traditional jazz improvisation as 'more or less profitable wanderings in a well-defined maze where the composer, performer and listener know the rules and references'.[10] Provided that the sociological template permits it, stylistic references may occur outside the framework – such as the appearance of classical music references in Heavy Metal performances, as an appeal to authenticity and a claim to a 'high' culture and tradition.[11] Improvisation is necessary in order to promote more complex ideas as societies develop through time – it is also through improvisation that new symbols and symbolic areas are created by comprehending signs through cultural variation differently.

Fourth, **expectation** is also a powerful trait, which permits communication within systems to re-affirm themselves and, on occasion, simplify the communication process. Empirical research has been conducted by Fedorenko et al[12] and also by Huron[13] in communication systems that deploy a sonic element, such as language and music. Fedorenko and her colleagues go as far as to suggest that these two systems (language and music) may share cognitive resource networks, a notion also explored by Patel,[14] as they activate similar representation cognitive 'archives' during syntactic processing of signals. Whether this is important or not will be seen in the following chapters.

The list of traits of communication requirements can be further expanded to include **imitation** (fifth requirement), as it can be associated with and directly influenced by

[10]Reynolds, R. (1965). Indeterminacy: Some Considerations. *Perspectives of New Music* 4/1 (Autumn – Winter), p. 136.

[11]See Deep Purple perform the title track from the album *Difficult to Cure* (also known as the 4th movement from Beethoven's Symphony no.9) from Richie Blackmore's Rainbow live at the Birmingham NEC,UK on 9th November 1993.

[12]Fedorenko, E.; Patel, A.; Casasanto, D.; Winawer, J.; Gibson, E. (2009). Structural integration in language and music: Evidence for a shared system. *Memory & Cognition,* 37 (1), pp.1-9.

[13]Huron, D. (2006). *Sweet anticipation: Music and the psychology of expectation.* Cambridge, MA: MIT Press.

[14]Patel, A. D. (2008). *Music, language, and the brain.* New York: Oxford University Press.

culture.[15] Although cultural transmission will be examined in the following sections in more detail, a small indicator for the role and necessity of culture in communication systems is that of **Social Cohesion**. There has been a lot of significant work on the manifestation of social cohesion in groups by musical anthropologists, ethnomusicologists and a few music psychologists,[16] although specifically for music there seems to be little agreement as to how it came about, if it really does offer social cohesion, and if it would matter significantly if it were to disappear completely. One of the least favourable cases presented against music was the interpretation of music as a by-product of language,[17] there to please our senses; the other extreme, but still not an accurate explanation in my view, is that music is a completely autonomous communication system.[18] I feel that if focus is placed not on *when* and *how* music was created, but *what it does* to its users, perhaps it would be easier to disseminate its role as an instigator of social cohesion, thus not only being just one of the possible parameters that enable communication, but a very influential one as synchronous activities bond groups. People who engage in such activities are far more likely to be willing to cooperate and engage in communication with each other in later different activities.[19] Mithen claims that 'music-making is first and foremost a shared activity, not just in the modern world, but through human cultures and history'.[20] If this is the case, there is evidence for it. Participants in synchronous activities - a proof of established communication among participants - which necessitate cooperation related to work, deploy communal singing during most daily activities, incorporating in some cases sonic elements of the environment.[21]

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[15]Fitch, W. T. (2009). Birdsong normalized by culture. *Nature*, 459, pp. 519-520.

[16]I mention indicatively Merriam, A. (1964). *The Anthropology of Music.* Northwestern University Press: Evanston, Illinois, and Blacking J. (1973). Also Patel, 2008.

[17]Pinker proposed that music is a derivative of other capacities but is itself peripheral and without use. I quote '[Arts respond to] a biologically pointless challenge: figuring out how to get at the pleasure circuits of the brain and deliver little jolts of enjoyment without the inconvenience of wringing bona fide fitness increments from the harsh world' (p. 524), and specifically for music, it '(music) is auditory cheesecake, an exquisite confection crafted to tickle the sensitive spots of at least six of our mental faculties' (p. 534). In Pinker, S. (1997). *How the Mind Works.* New York: W. W. Norton & Company.

[18]Fitch, T., Hauser, M., & Chomsky, N. (2005). The evolution of the language faculty: Clarifications and implications. *Cognition* 97, pp. 179-210.

[19]Wiltermuth, S.S., & Heath, C. (2009). Synchrony and Cooperation. *Psychological Science*, Volume 20, Issue 1, pp 1- 5.

[20]Mithen, S. (2005). *The Singing Neanderthals: The Origins of Music, Language, Mind and Body.* Weidenfeld and Nicolson: London, p205.

[21]Feld, S. (2001). *Bosavi: Rainforest Music from Papua New Guinea.* Smithsonian Folkways.

Therefore, it may not be too superficial to make the claim that music indeed enhances communication, as it has the ability to provide cohesion among individuals in a group.[22] This, among others, could very well be the reason why there is no known civilization so far regardless of its level of advancement that has excluded music from its culture.[23]

I hope I have presented a solid case regarding which prerequisites are necessary for communication, regardless of medium or culture. Next, I will examine the two issues proposed in Section 1.3: since my work aspires to be cross-cultural, I will explore the relation between communication and cognition, and hope to bring forth the effect of culture as its most prominent influence.

1.5. Communication, cognition and culture

The need to develop and establish communication may go beyond cognitive restrictions, such as lack of auditory stimulation or cultural differences. One example that may be of relevance is the development of pidgin languages by adults who are in need to communicate but have no language or other system available in common. Although pidgin languages are very simple in terms of grammar and have only limited vocabulary, within a few generations they evolve into 'full' languages.[24] If a participant's background culture formulates his/her cognitive abilities, then these results may be representative to a specific culture group of the participant, therefore it is worth considering whether culture shapes basic cognitive processes.

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[22]Mithen, S.: 2005.

[23]There is only one very sad exception to this rule. See Baily, J. (2001). *Can you stop the birds singing? - The censorship of music in Afghanistan*. Freemuse: Copenhagen, April Issue. The last extremity regarding the abolition of music taking place in Afghanistan was on August 27th 2012: Seventeen people were beheaded for taking part in a music and dance event. http://www.independent.co.uk/news/world/asia/taliban-insurgents-behead-17-civilians-in-afghanistan-8082292.html, last accessed on 03/09/2012

[24]Mühlhäusler, P. (1997). *Pidgin and Creole Linguistics.* Expanded and revised edition. Westminster Creolistics, series 3. London : University of Westminster Press.

Since I am dealing with the visual representation of music as a score and therefore as an intended sign-representation of sound, I will not be examining the relationship between cognition and culture as a holistic experience, but will be focusing on specific aspects which may affect this representation: language, time, pictorial perception, literacy, and existing work on the association of music and shape. The relation between cultural variation and the perception of sound as music devoid of visual representations is well established and dates as far back as Berlioz,[25] if not earlier, and therefore will not be examined in detail.

1.5.1. Language

According to the linguistic relativity hypothesis[26] a particular language's structure influences the habitual thought of its speakers, in the sense that different language patterns yield different patterns of thought. This idea challenges the possibility of perfectly representing the world with language, because it implies that the mechanisms of any language have a direct effect upon the thoughts of its speaker community. If this is the case, then there must be ample evidence of how language restructures our cognitive environment.

In an attempt to avoid urban legend mythology type reports I will largely be focusing on the influence of language on specific cognitive abilities, such as categorization and perception of number in relation to object and substance. Empirical evidence so far suggested a tight link between the rapid acquisition of words that occurs roughly at one year of age, and the ability to categorise. Children exhibit an extraordinary interest in naming things at the same time as they show increased development in

[25] Sorba, C. (2006). To Please the Public: Composers and Audiences in Nineteenth-Century Italy. *Journal of Interdisciplinary History*, xxxvi/4, pp. 595-614.Musicological studies dealing with the musical life of Berlioz's time offer themselves for contextualization and include: Goehr, L (2007). *The Imaginary Museum of Musical Works*, Oxford: Oxford University Press. Also Stephen Downes gives some general remarks about, what he calls, the German-Italian schism between sensual and spiritual attitudes towards listening to music. See
Downes, S. (2003). Musical Pleasures and Amorous Passions: Stendhal, the Crystallization Process, and Listening to Rossini and Beethoven. *19th-Century Music* xxvi/3, pp. 235-257.

[26] Whorf, B. (1956). *Language, Thought and Reality: Selected writings of Benjamin Lee Whorf.* Edited by John B. Carroll. MIT Press; First Edition, December 1956.

their categorization abilities.[27,28] However, it was unclear whether the nature of this relationship was causal, and if so, whether it was the adoption of language as a communication system that caused changes in categorization behaviour, or whether changes in the ability to categorise brought about the naming explosion. Cross-cultural evidence provided a key breakthrough: Two studies [29, 30] focusing on cognitive and linguistic development in Korean and English-speaking children found that English-speaking children were superior to Korean-speaking children in categorization and naming tasks, while Korean-speaking children were superior to English-speaking children in means-ends abilities (retrieving a toy by removing or manipulating an obstacle). These cross-linguistic differences in development were attributed to the observation that Korean-speaking mothers use more verbs and fewer nouns than English-speaking mothers.

Further in relation to language and cognition, studies in the grammatical domain of number have demonstrated that a link exists between acquisition of this category and similarity judgements of objects and substances.[31,32] These studies also demonstrated that between the ages of seven and nine, some rather specific cognitive reorganisation occurs whereby similarity judgement patterns diverge from a pre-existing 'innate' bias to a linguistically based one. These developmental findings were further supported by similar studies comparing cognitive and language development in Japanese older children and adults, who showed a clear material preference in the simple object condition, contrary to English-speaking older children

[27] Gopnik A., & Meltzoff, A.N. (1987). The development of categorization in the second year and its relation to other cognitive and linguistic development. *Child Development,* 58, pp.1523-1531.

[28] Gopnik A., & Meltzoff, A.N. (1992). Categorization and naming: Basic-level sorting in 18-month-olds and its relation to language. *Child Development*, 63, pp. 1091-1103.

[29] Gopnik, A., & Choi, S. (1995). Names, relational words and cognitive development in English and Korean Speakers: Nouns are not always learned before verbs. In M. Tomasello & W. Merriman (Eds.) *Beyond names for things: Young children's acquisition of verbs.* New Jersey: Erlbaum.

[30] Gopnik, A., Choi, S., & Baumberger, T. (1996). Cross-linguistic differences in semantic and cognitive development. *Cognitive Development*, 11, 2, pp. 197-227.

[31] Lucy, J., & Gaskins, S. (2001). Grammatical categories and the development of classification preferences: A comparative approach. In M. Bowerman & S. C. Levinson (Eds.), *Language acquisition and conceptual development* Cambridge, England: Cambridge University Press, pp. 257–283.

[32] Lucy, J., & Gaskins, S. (2003). Interaction of language type and referent type in the development of nonverbal classification preferences. In D. Gentner & S. Goldin-Meadow (eds.), *Language in Mind*, Cambridge, MA: MIT, pp. 465-492.

and adults who tended to favour shape. Imai and Gentner[33] concluded that while children are able to distinguish cognitively between objects and substances prior to the acquisition of language, similarity judgements in later childhood and adulthood rely, to a large extent, on the grammatical realisation of the distinction in a speaker's particular language, in support of the linguistic relativity hypothesis and the notion that language indeed shapes cognition, forming a solid bond early in life.

1.5.2. Time

The spatial representation of time is not common among cultures, even at metaphorical level.[34] The one key aspect affecting the representation of written information in visual form is directionality, which seems to be linked to the representation of time in two-dimensions. Two studies by Boroditsky[35,36] suggested that humans automatically access culturally specific spatial representations when making temporal judgements even in non-linguistic tasks, proposing that Mandarin speakers think of time moving vertically (top to bottom direction), while Westerners think of time moving in a horizontal left-to-right manner (H-ltr).

A third study by Fuhrman and Boroditsky[37] similarly suggested that Hebrew participants were also creating writing-direction consistent spatial representations of time by perceiving it to move in a horizontal right-to-left manner (H-rtl). Earlier work investigating the horizontal direction of time in writing carried out by Zwaan[38]

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[33]Imai, M., & Gentner, D. (1997). A crosslinguistic study of early word meaning: Universal ontology and linguistic influence. *Cognition*, 62, pp.169-200.

[34]Gentner, D., Imai, M., & Boroditsky, L. (2002). As time goes by: Evidence for two systems in processing space-time metaphors. *Language and Cognitive Processes*, Vol. 27, No. 5, pp. 537-565.

[35]Boroditsky, L. (2001). Does language shape thought? Mandarin and English speakers' conceptions of time. *Cognitive Psychology*, Vol. 43, No. 1, pp. 1-22.

[36]Boroditsky, L. (2011). How language shapes thought. *Scientific American,* Vol. 304, pp. 62-65.

[37]Fuhrman, O., & Boroditsky, L. (2010). Cross-cultural differences in mental representations of time: Evidence from an implicit non-linguistic task. *Cognitive Science*, Vol. 34, pp. 1430-1451.

[38]Zwaan, E.W.J. (1965). *Links en rechts in waarneming en beleving* (Left and right in visual perception as a function of the direction of writing). Doctoral Thesis, Rijksuniversiteit Utrecht, The Netherlands. Cited in Winn, W. (1994). Contributions of perceptual and cognitive processes to the comprehension of graphics. In Schnotz, W., & Kulliavy, R. W. (Eds.), *Comprehension of Graphics*. Amsterdam: North-Holland, pp. 3-27.

who similarly noted that perception of direction of time-movement among Dutch and Israeli participants on the page reflect the direction in which they write. The idea of where the 'past' is located was associated on the left side of the page by Dutch participants and on the right by Israelis, in alignment with the concept of beginning and ending in the relative writing systems used (Dutch is written H-ltr, while Hebrew is written H-rtl). Further to the above studies, Marilyn Mitchell claims that the visual representation of time in timelines usually follows the convention of writing for each culture as well.[39] Another example can also be realized in Japanese comics, where the story timeline traditionally flows in a vertical right-to-left manner (Figure 2).

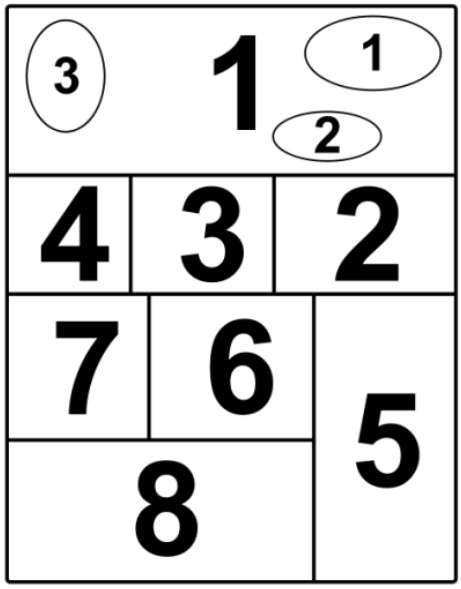

Figure 2: Reading direction in Japanese Comics

When these comics are brought to the European and American markets, the images are mirrored horizontally before the translation is printed, so that the story would be proceeding in a left-to-right manner.[40] In a further study conducted by Van Sommers[41] participants were requested to 'draw' a visual representation of time.

[39]'I have seen timelines that move from right to left only in the literature of cultures that read from right to left.'
Mitchell, M. (2004). The Visual Representation of Time in Timelines, Graphs and Charts. In: *Australian & New Zealand Communication Association Conference.* http://epublications.bond.edu.au/hss_pubs/107
last accessed on 3/9/2012
[40]Farago, A. (2007). Interview: Jason Thompson. *The Comics Journal*, September 30, 2007.
[41]Van Sommers, P. (1984). *Drawing and cognition: Descriptive and experimental studies of graphic production processes*. Cambridge: Cambridge University Press.

Most drew a horizontal timeline which proceeded from *earlier* on the left of the page to *later* on the right. None of Van Sommers' subjects drew a horizontal timeline that proceeded from right to left, while interestingly the second most common answer provided by subjects in this study was a vertical list that was drawn from *earlier* at the top of the page to *later* at the bottom, with the author reporting that when recent time spans of months and years are represented in a vertical timeline, time always runs down the page.

Whether it is culture directing cognition or the opposite, the representation of time seems to vary across cultures and therefore needs to be taken into consideration for the manifestation of music through visual means, as will be shown in this study.

1.5.3. Shape and Pictorial Perception in general

In 1972 Deregowski proposed a lingering idea in many researchers' minds: *'Do pictures offer us a lingua franca for inter-cultural communication?'* [42] After conducting a series of experiments mostly concerning pictorial depth, he reached the conclusion that some non-Western societies may lack the ability to perceive and integrate depth cues in pictures, suggesting that pictorial perception is influenced by cultural learning. In an additional study, Deregowski further suggested that orthogonal drawings that include perspective is not the norm in all cultures, which may demonstrate aesthetic preferences for split-type drawings. Although his methods were criticized as being culturally insensitive, similar ideas regarding different cognitive perception of shapes and pictures have been put forth by Nisbett,[43] whose research further suggests that our cognitive processes are influenced and shaped by culture. Focusing on Western and Asian participants, he demonstrated that the first group tends to focus on dominant foreground objects in describing pictures, while the second group provided a more holistic approach in their description. Interestingly, Asians brought up in Western cultures demonstrated the western pattern of thought

[42]Deregowski, J.B. (1972). Pictorial perception and culture. *Scientific American,* Vol. 227, pp. 82-88.
[43]Nisbett, R. (2003). *The Geography of Thought: How Asians and Westerners Think Differently - And Why*. New York: Free Press.

(dominant foreground objects), implying that this selection is cultural- and not biologically- driven.

Research on the cultural relativity of shape by Roberson, Davidoff and Shapiro[44] examined whether a hypothesis proposed by Rosch[45] was accurate. The initial hypothesis claimed that in all human cultures there is the tendency to group shapes into squares, triangles and circles. Roberson and her colleagues replicated the experiment with the Himba tribe in North Namibia and reached opposite conclusions based on their research outcome: there is a tendency to categorize shapes differently according to the participants' culture. The aspect of music, shape and pictorial perception will be presented separately below.

1.5.4. Music, Shape and Pictorial Perception

I will now deal with the association between music and shape as a sign-icon represented in time, and not as an established symbolic system of representation such as notation. It is common to assume that specific acoustic parameters are associated with certain visual metaphors. Studies have indicated the following cross-modal matches: pitch-height with vertical placement on an x-y axis, timbre with pattern-sign, loudness (volume) with size and duration with length represented horizontally across the x-y axis mentioned above,[46,47,48,49] even though loudness has also been empirically associated with verticality[50] and length.[51] The first step in representing

[44]Roberson, D., Davidoff, J., & Shapiro, L. (2002). Squaring the circle: The cultural relativity of good shape. *Journal of Cognition and Culture*, Vol. 2, pp. 29-53.
[45] Rosch, E.H. (1973). Natural categories. *Cognitive Psychology*, Vol. 4, pp. 328-350.
[46] Walker, A. R. (1978). Perception and music notation. *Psychology of Music*, 6, pp. 21-46.
[47] Walker, A. R. (1981). The presence of internalized images of musical sounds. *Council for Research in Music Education*, 66-67, pp. 107-112.
[48] Walker, A. R. (1985). Mental imagery and musical concepts: Some evidence from the congenitally blind. *Council for Research in Music Education*, 85, pp. 229-238.
[49] Walker, A.R. (1987b). The effects of culture, environment, age and musical training on choices of visual metaphors for sound. *Perception and Psychophysics*, Vol. 42, No. 5, pp. 491-502.
[50] Eitan, Z., Schupak, A., & Marks, L.E. (2010). Louder is Higher: Cross-Modal Interaction of Loudness Change and Vertical Motion in Speeded Classification. In: K. Miyazaki, Y. Hiraga, M. Adachi, Y. Nakajima, & M. Tsuzaki (Eds.), *Proceedings of the 10th international conference on music perception and cognition (ICMP10)*, Causal Productions, Adelaide (2008), (10 pp).

sound as an image takes place in the brain before represented visually in any form; The first step, prior to a transition on a two dimensional form, would be a visual-kinetic imagery, as empirically investigated by Eitan and Granot,[52] and Eitan and Tubul.[53]

However, visual-kinetic metaphors take place in a three dimensional dynamic world, which cannot be mapped directly in a two-dimensional form such as paper, or any flat surface. As organised movement in music has a name (dancing) I do not wish to elaborate further on this, as my main focus is graphic representation. I will propose, in what follows, that the perception of sound and its transformation into an image is influenced by cultural parameters. Feld's work among the Kaluli has been most influential in establishing this point. He claims that Kaluli 'logical patterns of symbolic material do not exist for themselves, but are there so as to activate and bring forth meaningful social relations through structures expression'.[54] Figure 3 below is an echo of his structural summaries of mind concept:

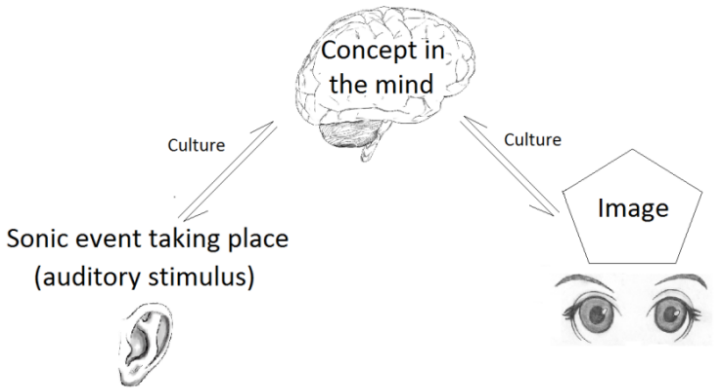

Figure 3: The transformation of sound into image in the brain

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http://www2.tau.ac.il/InternetFiles/Segel/Art/UserFiles/file/Proceedings%2010.pdf, last accessed on 3/9/2012

[51] Carello, C., Anderson, K.L., & Kunkler-Peck, A.J. (1998). Perception of object length by sound. *Psychological Science*, Vol. 9, pp. 211-214.

[52] Eitan, Z., & Granot, R.Y. (2006). How music moves: Musical parameters and listeners' images of motion. *Music Perception*, Vol. 23, pp. 221-248.

[53] Eitan, Z., & Tubul, N. (2007). Musical parameters and children's spatio-kinetic imagery. *Paper presented at the 8th Conference of the Society for Music Perception and Cognition* (SMPC), Montreal, Canada, August 2007

[54] Feld, S. (1982). *Sound and Sentiment: Birds, Weeping, Poetics and Song in Kaluli Expression*. University of Pennsylvania Press, Philadelphia, p.16.

This claim is supported by empirical evidence, since sound as metaphor has been proven to vary cross-culturally. A study conducted by Eitan and Timmers [55] suggested that

> Diverse and strong cross-domain mappings for pitch exist latently besides the common verticality metaphor. Such mappings, as indicated by the 'correct' identification of non-Western pitch metaphors by Western participants, are not based solely on culture-specific conventions, but may draw upon basic interactions with the physical environment, in particular the natural correlates of sound production. Furthermore, the ubiquity of the verticality metaphor in Western usage notwithstanding, results imply that cross-domain pitch mappings are largely independent of that metaphor, and seem to be based upon different underlying dimensions. The most important of these dimensions, as revealed by factor analysis, is a composite component linking size, mass, and visual lightness.

Further forced-choice design experiments investigating visual metaphors for sound concluded that sound is affected by culture and environment, as well as exposure to cultural traits associated with musical representation, musical training, and exposure to western culture and, at a lesser effect, age.[56,57] The effect of musical training and whether it affects visual imagery has been a matter of disagreement[58,59] amongst researchers. Regardless of training, recent questionnaire studies suggested that the

[55] Eitan, Z., & Timmers, R. (2010). Beethoven's last piano sonata and those who follow crocodiles: Cross-domain mappings of auditory pitch in a musical context. *Cognition,* vol. 114, no. 3, pp. 405-422.

[56] Walker, A.R. (1987a). Some differences between pitch perception by children of different cultural and musical backgrounds. *Council for Research in Music Education,* Bulletin No. 91, pp. 166-170.

[57] Sadek, A.A.M. (1987). Visualisation of musical concepts. *Council for Research in Music Education*, Bulletin No. 91, pp. 149-154.

[58] Lipscomb, S. D., & Kim, E. M. (2004). Perceived Match between visual parameters and auditory correlates: an experimental multimedia investigation. In *Proceedings of the 8th international conference on Music Perception and Cognition*, Evanston, Il. pp. 72-75.

[59] Küssner, M.B., Prior, H.M., Gold, N., & Leech-Wilkinson, D. (2012). Getting the shapes 'right' at the expense of creativity? How musicians' and non-musicians' visualizations of sound differ. *Proceedings of the 12th international conference on Music Perception and Cognition*, Thessaloniki, Greece, p. 121.

association between music and shape is indeed affected by culture, if not determined by it. [60]

These studies usually adopt a forced-choice design investigation; little research has been carried out dealing with free sign-representation of music. Namely, one of the most influential experiments carried out in the past was by Tan and Kelly,[61] in which whole musical compositions were used as stimuli and participants were called to represent these on paper. Participants demonstrated a tendency to create representations aligned on an x-y axis, were time was represented moving H-ltr fashion, while the musical surface (and primarily pitch) where to be found on the vertical axis.

Similar to Tan and Kelly, most recently Küssner (2012) obtained similar results from British participants using sine waves and 'real' music alike. Apart from Tan & Kelly's work, the majority of studies which deployed free representation were primarily involving children participants in an attempt to examine their cognitive development.[62,63] As far as I am aware, there is no cross-cultural study making use of free representation involving trained adult musicians.

Two parameters are left to examine before establishing the full potential of my investigation: The effect of musical and linguistic literacy, and investigating socio-cultural variables that may affect it.

[60] Prior, H.M. (2010). Links between music and shape: Style-specific; language-specific; or universal? *1st International Colloquium on Universals in Music: Data, issues, perspectives*, Université de Provence, Aix, France.

[61] Tan, S., & Kelly, M. (2004). Graphic representations of short musical compositions. *Psychology of Music*, Vol. 32, No. 2, pp. 191-212.

[62] Reybrouck, M., Verschaffel, L., & Lauwerier, S. (2009). Children's graphical notations as representational tools for musical sense-making in a music-listening task. *British Journal of Music Education*, Vol. 26, No. 2, pp. 189-211.

[63] Verschaffel, L., Reybrouck, M., Janssens, M., & Van Dooren, W. (2010). Using graphical notations to assess children's experiencing of simple and complex musical fragments. *Psychology of Music*, Vol. 38, No. 3, pp. 259-284.

1.6. Communication and its symbolic manifestation in society: Literacy and the substantial representation of sound

The acquisition of literacy has a major effect on cognition, such as altering the conceptualization of abstract categories.[64] The depiction of sound into image, whether we name this process writing or notating is something of relatively recent origin – the first written languages appeared around 5000 years ago in cuneiform,[65] their existence serving as a mnemonic tool for merchant transactions. Writing brings a fundamental shift in the form of thought, transforming it from a world of sound to a world of sight. The transition from one medium to the other has direct implications for most aspects of human societies, ranging from philosophy and religion to structuralism and history.[66] I feel it is relevant to present the acquisition of literacy in language and music parallel to each other,[67] as musical literacy may also affect music cognition.

Earlier, I mentioned that musical literacy may affect music cognition and alter the way in which musicians process and think about their art. From a developmental perspective, there are studies showing how young children respond to music notation. Pedagogical methodologies of music tuition in western culture quite often equate learning music to teaching (and learning) WSN.[68] Bamberger claims that if too much stress is put on young students on learning WSN, it may disguise and discourage students' intuitive responsiveness to certain musical parameters, rhythm

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[64] Ong, W.J. (1982). *Orality and Literacy: The Technologizing of the Word*.1st ed. 2nd ed. New York: Routledge, 2002.

[65] Schmandt-Besserat, D. (1992). *How Writing Came About*. Austin: University of Texas Press.

[66] Two most influential works related to the transformation of society through literacy are Eric Havelock's works on the adoption of the alphabet by the Ancient Greeks. See Havelock, E.A. (1981). *The Literate Revolution in Greece and its Cultural Consequences*. Princeton, N.J.: Princeton University Press, as well as
Havelock, E.A. (1986). *The Muse Learns to Write: Reflections on Orality and Literacy from Antiquity to the Present*. New Haven: Yale.

[67] The reader should keep in mind that the small introduction to linguistic literacy and the development of orthography here is not my main point. For a more concise investigation on this matter, see Seifart, F. (2006). Orthography development. In Gippert, N; Himmelmann, P; Mosel, U (Eds): *Essentials of Language Documentation*. Mouton de Gruyter, pp.275-300

[68] Barrett, M. (2005). Representation, cognition and communication: Invented notation in children's musical
communication. In D. Miell, R. MacDonald & D.J. Hargreaves (Eds.), *Musical communication*. New York: Oxford University Press, pp. 117-142.

and pitch in particular,[69] demonstrating similar attributes to literacy, since WSN as a unit of description, strongly influences units of perception.[70] Exploring the free representational idea presented earlier by Tan & Kelly in 2004, it is apparent that a similar approach is suggested within a text-bound world: Bamberger claims that an approach able to introduce concepts through direct intuitive interaction with music activities unbound to standard music notation has been shown to be beneficial to the learner.[71]

Both Bamberger and Barrett provided an innovative way of allowing their participants (who were mainly children) to be able to create notational systems of their own 'invention' without being restricted to the pitch-over-time model which most organised notational systems follow. The notational sketches created by the youngsters familiar with classical notation and those created by non-musicians were quite similar. Yet the process that they followed in getting there was not identical. Both groups were attempting to give notations which were executive in manner, however, musically literate children seemed to adopt a performer approach, compared to the musically non-literate groups who were following a listener's approach.[72] The directions were to provide a means of 'invented' notation of a familiar tune without any sense or guidance from the researcher, so that one of their peers would be able to perform the piece. A number of participants mimicked the already existing standardised notational model, yet responses also included 'notational guidelines' similar to Jianpu, Shōmyō and Fu Ho U systems. These systems mostly include performance guidelines not closely associated to pitch, but rather in playing techniques and the aesthetics of the piece, while taking little consideration of time values.

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[69] Bamberger, J. (2005). How the conventions of music notation shape musical perception and performance. In D. Miell, R. MacDonald & D. J. Hargreaves (Eds.), *Musical communication*. New York: Oxford University Press, pp. 143-170.

[70] Bamberger, J. (1991). *The mind behind the musical ear*. Cambridge, MA: Harvard University Press, p.15.

[71] Bamberger, J. (2000). *Developing musical intuition*. New York: Oxford University Press.

[72] See Bamberger, J. (2005).

However, the effect of literacy even among non-musically trained participants cannot be denied, as further demonstrated by Adachi:[73] Japanese children depict sounds and actions by means of onomatopoeia (sound symbolism) simply by acquiring literacy in language, while further knowledge acquisition in WSN leads to a parallel representation stage, to be followed by the dominance of WSN as a representational method in rhythm as a more accurate form. Similar to language vocabularies, sign systems of musically literate cultures are vastly expanded compared to musically non-literate cultures when it comes to re-creating a piece.[74] Variations among visual representations of music may be justified in the same way that languages utilize different syntactical devices.[75] Linguistic script uses symbols that stand for words, syllables, or letters based on the evolution from a picture writing system to a phonetic system (verbal, syllabic or alphabetic).[76] Primal forms of writing did not attempt to convey the sounds of words (such as phonetic alphabets) but ideas which were expressed (ideograms) through the word-sounds. *'True writing emerges with (a) Logographic signs; (b) ... Phonetic flexibility in the use of graphs, ('rebus' writing, or what we may call 'punning' ;) (c) Phonetic complements, and (d) logographs used for their sound value alone, i.e., they are 'desemanticized.''*[77] Similarly, some primal forms of notation such as the Byzantine or early medieval neumatic script did not attempt to mark out what we now have come to regard as individual pitches and units of rhythm, but only shapes and contours of melodic lines customary in current practice. In spite of the long process to 'evolve' from plainchant notation of the early 10th and 11th century to the western standard notational system, used today, several attributes (such as depiction of 'musical' information regarding mostly pitch on a time-axis moving left to right) have been pertained. Differences in the role of notation, depending on what its users wanted from it and expected it to do,

[73] Adachi, M. (1997). Japanese Children's Use of Linguistic Symbols in Depicting Rhythm Patterns. *Proceedings of the 4th International Conference on Music Perception and Cognition*, McGill University, pp. 413-418. Also in Japanese Journal of Education Research, 27(1), pp.25-36.
[74] Xiangpeng Huang, & Lam, Joseph S. C (1992). Ancient Tunes Hidden in Modern Gongche Notation. *Yearbook for Traditional Music*, Vol. 24 pp. 8-13.
[75] Sloboda, J. A. (1985). *The Musical Mind: The Cognitive Psychology of Music.* Oxford: Oxford University Press.
[76] Schmandt-Besserat, D. (1992). Austin: University of Texas Press.
[77] Campbell, L. (1984). The Implications of Mayan Historical Linguistics for Glyphic Research. *Phoneticism in Mayan Hieroglyphic Writing.* (Eds) John S. Justeson and Lyle Campbell Albany: Institute for Mesoamerican Studies, State University of New York at Albany, pp. 1–16.

have led to the existence of various systems of musical literacy. These systems differ primarily in the way sound is depicted, falling into the categories presented below:

a. Action (executive) notations: Most types of instrumental tablatures which tell the performer where to place their hands on the instrument (such as guitar tablatures, Chinese Qin, Japanese koto, and some electronic scores).
b. Alphabetic notations using words, syllables, or letters to stand for single sounds of fixed pitch (such as Ancient Greek notation; Indian SwarLipi, Chinese TsoChuan and Japanese shōga).
c. Analogue notations: By analogue I mean an agreement or correspondence in certain respects between things otherwise different. For example WSN, with 'high' and 'low' pitches reflected in high and low positions on the stave. In analogue notation there is a resemblance of relations (rather than exact equivalence - as with alphabetic notations) between the notation and the resultant sound.
d. Directional signs, to indicate rising or falling pitch (early plainchant, Buddhist Shōmyō, contemporary graphic notations).
e. Explanatory notations: Many types of verbal guidance on expression, style, tempo, and meaning. Some examples familiar to western performers are *allegro, dolce*, or descriptions in programme music.
f. Generative notations, such as certain types of computer programmes, able to 'create' musical works. This category also includes some 'verbal' scores (such as Cage 4'33'').
g. Pattern signs, to indicate recurring groups of notes that always appear in a set form (such as trills in WSN).

It could well be possible that prescriptive notations may have evolved from alphabetic systems (one symbol – one pitch) to analogue systems (such as WSN). In principle, the larger amount of detail contained in written forms of music lead to a more accurate reproduction,[78] just as in literacy a written account of any event has a probability of containing more information.

From the above, it also becomes evident that WSN is but a fragment of notations in the history of musical existence; it is a system with flaws, and is in some cases

[78]This, however, could mean that the written form can be so painstakingly accurate that it is very challenging to perform, as performers of Boulez works may attest.

unable to carry the meaning behind non-western works of music. If an illusion of superiority is supported by hardcore fans of WSN, a brief look can be taken into Chinese Guqin lute notational tablatures, where the amount of detail given by a single character leaves no room for disambiguation errors (Figure 4).

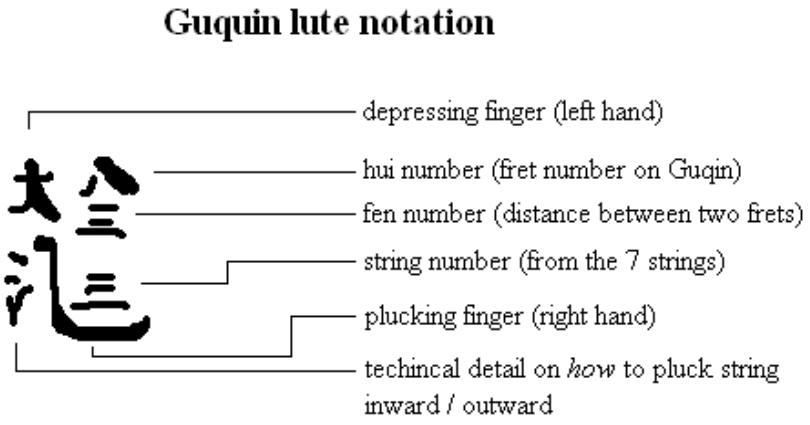

Figure 4: Guqin lute notation (source: Cole, 1974) [79]

The notion of musical composition and its notation is not universal and, prior to the expansion and establishment of WSN to its present rate, depended on cultural conventions. When dealing with non-western music notation, it is vital to avoid polarized view points from the scope of western art music which might not be compatible with the perspective understanding of music as a social activity in non-western cultures. The relationship between any proposed notational system and the underlying cultural philosophy of the music is also another aspect that needs to be taken into consideration. According to Seeger two classifications may arise: prescriptive and descriptive,[80] where prescriptive notation can be defined as 'a blueprint of how a specific piece of music shall be made to sound', while descriptive notation is 'a report of how a specific performance of any music actually did sound'. Could Seeger's separation provide insight as to how musicians of a culture perceive their music notation? The answer is, 'probably not', since he does not take into account that notational systems (regardless of their origin) may contain elements both prescriptive *and* descriptive, as well as directional signs. Examples are early

[79] Cole, H. (1974). *Sounds and signs: aspects of musical notation*. Oxford University Press, London.
[80] Seeger, C. (1958). Prescriptive and Descriptive Music-Writing. *The Musical Quarterly*, Vol. 44, No. 2 (Apr), pp. 184-195.

plainchant, Shōmyō chants and graphic scores which fit the description of both terms equally well. Signs in WSN belong to two main categories: Incidental directives (*crescendo, cantabile, dolce*) and graphic expressions (circles, lines, sharps, flats) for an analogue description representing the sound-time graph. If Seeger's categorization were to be followed, WSN would also be considered to be both descriptive as well as prescriptive. Categorisations put aside, it is rather obvious that musical literacy affects the perception of music, just as linguistic literacy affects language.

1.7. Towards a communication model

At this point, I would like to introduce Philip Tagg's 1999 communication model from the field of music semiotics, in order to provide us with some useful terminology as well as a visual scheme, below:

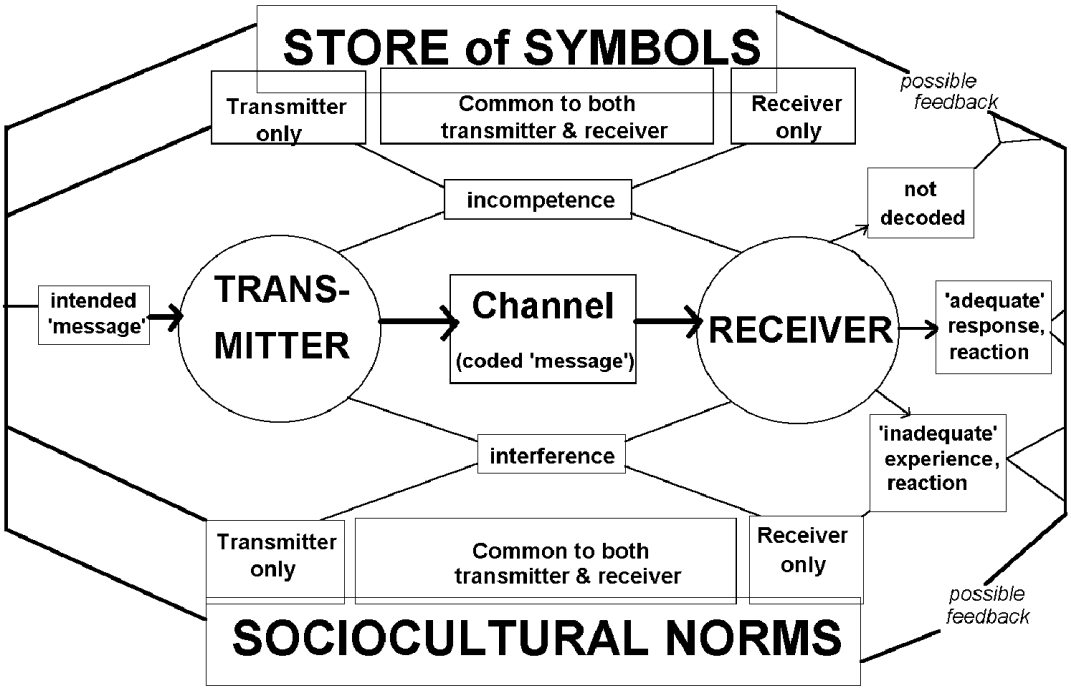

Figure 5: Philip Tagg's communication model[81]

The model demonstrates that there are very delicate balances regarding the accuracy of intended messages - in our case the transformation of musical sound into visual

[81]Tagg, P. (1999). *Introductory notes to the semiotics of music.* Version 3: Liverpool /Brisbane, July 1999, p.9. http://tagg.org/xpdfs/semiotug.pdf

shape. Even though the performer (transmitter) has the power to alter the message at will, the coding system of the message has to be familiar to all parties involved. If the encoding of the (musical) message is inadequate, in that the symbols used are not comprehensible to all, then Tagg calls this Codal Incompetence. According to ethnomusicologists, without cultural agreement amongst at least a few members of a community on what is perceived, musical communication cannot take place. How would Codal Incompetence translate into musical notation?

Below (Figure 6) is a piece for shakuhachi (Japanese end-blown flute) composed by John Kaizan Neptune, written in WSN on the left and Fu Ho U[82] on the right.

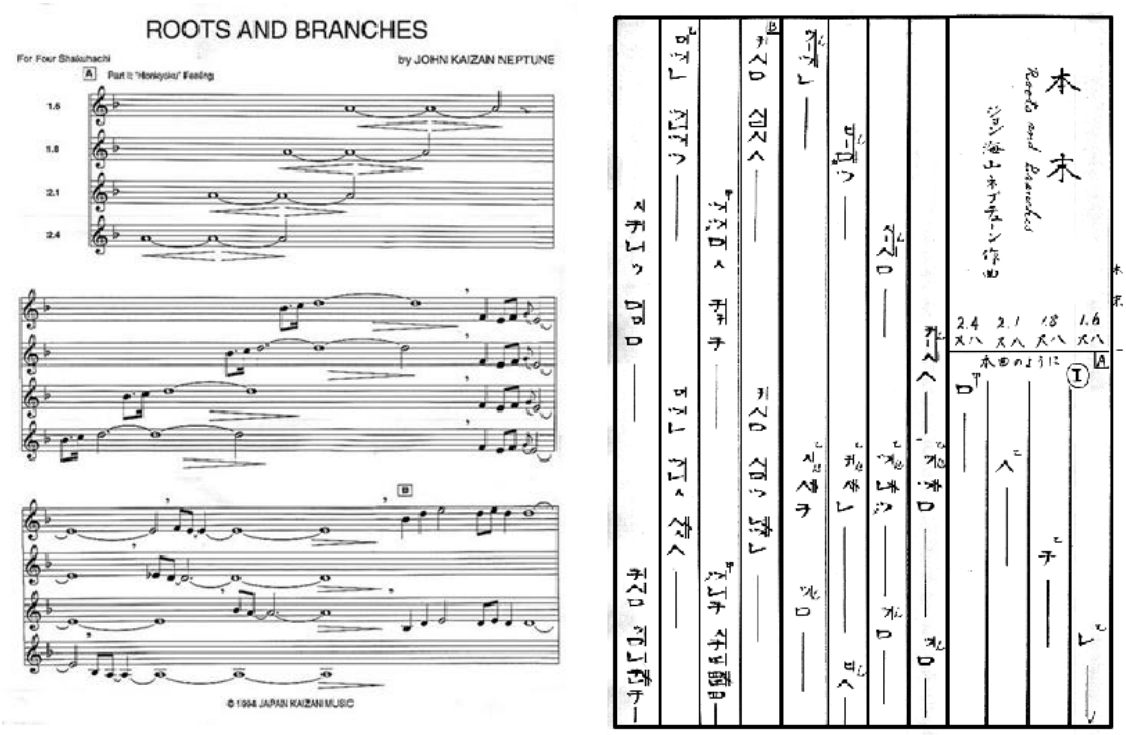

Figure 6: Roots and Branches, by composer John Kaizan Neptune[83]

A flute player trained in a conservatory in Western Europe might not even guess that the page on the right contains musical information; in the same manner, a master of Japanese traditional music from the previous century might not have guessed that the

[82]Fu Ho U is a traditional Japanese notation system used for the shakuhachi (bamboo flute).
[83]Neptune, J.K (1994): *The Shakuhachi World of John Kaizan Neptune*. By kind permission of the composer. In: http://www.pacificsites.net/~jneptune/

page on the right could be a musical score[84]. In the same manner for linguistic script, 你好，我的名字是乔治 and مرحبا جورجاسمي، remains a mystery for someone not familiar with those scripts / symbols, however simple the information contained may be (Nìháo, wò de míng zìshì Qiáozhì - Mora khaban, des mi Jorj – Hello, my name is George, in Mandarin and Arabic script respectively).

Based on evidence from the above, it is logical to assume that the visual representation of transformation of either language or music would be affected by the cultural background of the performer, as various cultural variables seem to affect cognitive traits possibly affecting this relation, in addition to possessing the appropriate channel / code of communication. If the importance of a cultural alignment between society and musical literacy is not fully understood, I will present a small case study below.

1.8. Prescriptive, descriptive and 'destructive': A case study on Ancient Greek Notation demonstrating the influence of culture in music notation

Merriam [85] presented ten functions for music: emotional expression, aesthetic enjoyment, entertainment, communication, symbolic representation, physical response, enforcing community and social forms, validation of social institutions and religious rituals, contribution to the community and stability of culture, as well as contribution to the integration of society. What causes room for debate though is the fact that these functions are seen to be articulated in dissimilar fashion among cultures, or even among subjects within the same culture, nor are they understood at

[84] Since Japanese children are exposed to western standard notation from an early age in their national curriculum since 1895, it is challenging to find Japanese musicians who have not been exposed to WSN at all. The notion that Japanese traditional performers are unexposed to WSN is used by convention here and refers essentially to individuals with minimal or non-existent proficiency in WSN.

[85] Merriam, A. (1964). Northwestern University Press. Evanston, Illinois.

the same level: when it comes to expression and comprehension of musical meaning, Tagg[86] suggested universality is not so obvious as Fritz et al[87] would like to believe. For the written musical text, if Merriam's musical functions are not comprehensible in the same manner but may be affected by a musician's cultural background, there should be some written evidence at least. I would like to present at this point a small case study regarding the change of notational system in antiquity. The sociological changes at the end of the 4th century A.D. led to changes in most of Merriam's musical functions, thus changing musical notation. In this sense, although music may be universal, it is cultural practices that define the role and form of the written aspect of music.

Ancient Greek notation (AGN) was an alphabetic system based on the principle of one symbol – one pitch,[88] and was capable of representing pitch and note-duration, and to a limited extent, harmony. The system can be decoded once a starting point has been selected. Bellermann equated the Greek note C (vocal and instrumental) with the western pitch A_4 (440 Hz), although this puts the entire system too high by about a minor third.[89] The notational symbols were placed above relevant text syllables, and the rhythmical symbols above the relevant notes. It had a lifespan of nine hundred years (5th century B.C. to 4th century AD).[90] West[91] and Pöhlmann[92] suggested that AGN was not highly regarded in its time. However, two points have to be noted. First, within the time frame of its existence, AGN evolved: a rhythmical notation developed to supplement the alphabetic pitch notation[93] as well as two separate systems in use for choral and instrumental music, proving that the system

[86] Tagg, P. (1993). Universal music and the case of death. *Critical Quarterly*, Vol. 35, No. 2, pp. 54-98.
[87] Fritz, T., Jentschke, S., Gosselin, N., Sammler, D., Peretz, I., Turner, R., Friederici, A., & Koelsch, S. (2009). Universal recognition of three basic emotions in music. *Current Biology*, Vol. 19, No. 7, pp. 573-576.
[88] Barbour, M. (1960). The Principles of Greek Notation. *Journal of the American Musicological Society*, Vol. 13, No. 1/3, pp. 1-17.
[89] Bellermann, F. J. (1840). *Die Hymnen des Dionysius und Mesomedes*, Berlin. Also Bellermann, F. J. (1841). Anonymi scriptio de musica, Bachii senioris introductio artis musicae, Berlin.
[90] West, M. L. (1992). *Ancient Greek Music,* Oxford: Oxford University Press, pp.277-326
[91] West, M. L (1992). pp.254-76.
[92] Pöhlmann, E. (1997). Notation, II. Antike, *MGG* 2nd ed. Sachteil, vol. 7, pp.283-289.
[93] Pöhlmann, E., & West M. L. (2001). *Documents of Ancient Greek Music: The Extant Melodies and Fragments*. Oxford: Clarendon Press p.1

did not remain static, unlike the Indian alphabetical notation system until Bhatkhande's reformation [94] or other systems of the Orient which remained remarkably static through the passage of time.[95] These evolutions suggest that AGN was active enough for its users to seek to improve it, in spite of the belief that it was not highly used or regarded.

Second, it is surprising that the surviving number of ancient Greek notations found outside musical texts (as in hymns and chorus parts from tragedies), should be indicative as to the extent of the system's circulation as active and not merely a theoretical treatise. Its use was common enough that when potters in Ancient Greece decorated vases depicting musicians they put notational symbols beneath or next to them, springing out of their mouths or musical instruments.[96] Apart from pots and vases, fragments of notation have also been found on tombstones, temples, and even the Athenian treasury at Delphi.[97]

It has been suggested that Ancient Greek notation and Ancient Greek music in general sustained through time and that both were transformed to become the modern western music of today.[98] Since the finding of the Oxyrhynchus Papyrus 1786[99] (O.P. 1786, see Figure 7), one of the latest examples of Ancient Greek notation and unique in that it is the only example of Christian Music written in this musical system, the supporters of this theory have felt justified. This particular hymn has been excessively used by those supporting the idea of the direct continuum between

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[94]Bhatkhande, Pandit Vishnu Narayan (1990). *Hindustani sangeet paddhati.* Translated by Garg P.K. Sangeet Karyalaya. On the work of Bhathande for Hindustani music see Sobhana Nayar *(*1989). *Bhatkhande's contribution to music: a historical perspective.* Popular Prakashan.

[95]Kaufmann, W. (1967). *Musical notations of the Orient: notational systems of Continental, East, South and Central Asia.* Indiana University Press, Reprint 1988. p.3.

[96]Pöhlmann, E (1960). *Griechische Musikfragmente. Ein Weg zur altgriechischen Musik.* Nürnberg, p.83-84.

[97]Reinach, T. (1926). *La musique grecque*, Paris, Payot.

[98]Høeg, C. (1955-57). Les rapports de la musique chrétienne et de la musique de l'antiquité classique, *Byzantion,* 25-27, pp.383-412.

[99]Hunt, A. S., & Jones, H. S. (1922). *Christian Hymn with Musical Notation, The Oxyrhynchus Papyri*, eds. Grenfell B.P.; Hunt, A.S.; Lobel E. et al. London: Egypt Exploration Fund., 15, pp.21–25.

Ancient Greek Music and early Christian music and disclaiming any connection with the Music of the Synagogue.[100]

However, Pöhlmann,[101] Werner[102] and later Pöhlmann and West[103] pointed out metric violations which suggested that, although the language, notation and mode (hypolydian) used were Greek, the music's melody and rhythm were not; the equivalent would be if a piece of Indian music was notated with WSN – although such an action *is* possible, it is not necessarily accurate in representing elements of its music, nor does it suggest that all Indian music uses WSN as a mode of representation.

As seen from the examples on musical scores and linguistic script, when a transmitter and a receiver do not share the same code of symbols, meaningful communication is impossible. Could Tagg's Codal Incompetence be the reason behind the disappearance of Ancient Greek Notation? For our example of Ancient Greek notation used in O.P. 1786, it is clear that the scribe on the score was an expert in using it, suggesting that there was enough competence to allow notators to make full usage of the coding system by the 4th century AD. What, though, of the music in the Oxyrhynchus hymn? Could it be transcribed using this specific notational system? As mentioned, the hymn has metric violations in its notation which are pointed out by the fact that the person who notated it was unable to provide a solution for them. Greek notation had to define each note, since its music was syllabic-rhythmic and its phrases were not melismatic, as was Christian music. The latter required a method by which the most venerable elements of liturgical music could be fixed, namely the cantillation of the scriptural lessons and psalmody. The Greek system, with its minute description of every tone, would have proved inadequate to the task since *phrases or syntactic units* had to be provided with notation, not individual syllables.

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[100]In Günther Wille′s words: gegen eine Herleitung deralt christlichen Musikdes Westens aus der Music der Synagoge. (1967). *Musica Romana. Die BedeutungderMusik im Lebender Römer.* Amsterdam. p.368

[101]Pöhlmann, E. (1960). p.47

[102]Werner, E. (1959). *The Sacred Bridge. The Interdependence of Liturgy and Music in Synagogue and Church during the First Millennium.* London - New York, p.355.

[103]Pöhlmann, E., & West M. L. (2001). p.190-193.

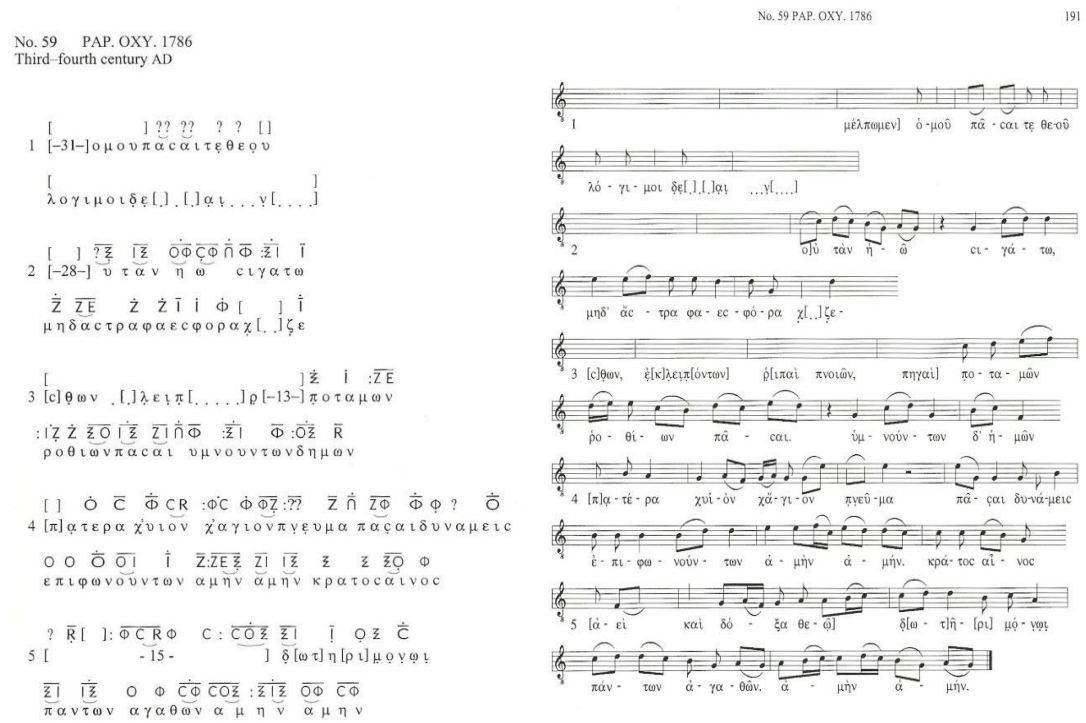

Figure 7: OP 1782 in AGN on the left, and its modern transcription in WSN on the right

According to Holleman the papyrus is a piece of theoretical purport, a demonstration of the inadequacy, and at least as regards the rhythmical signs, of the fundamental error of using the existing Greek notation for Christian music, hence the ecphonetic origin of the Greek and Roman neumes.[104] Thus AGN was proven impractical for the new music.

This Christian hymn in Greek musical notation was an obvious demonstration of the necessity of creating and organizing an entirely new notation system for the new Christian music. As is obvious, Codal Incompetence seems to play a part indeed. However, the question remains as to why the notator of the hymn did not go a step further and introduce new metric symbols, so as to portray the rhythm more accurately. Why did the evolution of the AGN stop here, at the 4th century A.D. and not go on? This leads us to examine reasons other than Codal Incompetence that led to the disappearance of AGN.

I will turn to examine the possibility of Codal Interference. Through Tagg's chart (Figure 5) we see that Codal Interference implies that although the coding system may be common, varying socio-cultural norms may affect communication. Codal

[104]Werner, E. (1959). p.358.

Interference describes miscommunication between two counterparts when they lack the same socio-cultural norms. In the modern age of communication, human ideas can be passed on rapidly in a culture and can easily be evolved, changed, manipulated and further spread in a viral form. However, symbolic systems develop autonomously (thus justifying the variety in both linguistic script and notation) according to rules set by cultural variety, social differences as well as entirely different needs from its users. In order for an idea (for example written language or musical notation) to become desirable to the population, it needs to find a suitable hold in order to acquire meaning in the new environment. Latin letter characters, for instance, have proved their versatility, if not their cultural domination, as they are being used by people speaking languages of both western and non-western origins. This versatility and deployment, as we have seen in the previous section and will see later on in 5.7, may be enforced from non-linguistic as well as non-musical parameters. For musical notation, we have seen that AGN, as a socio-cultural phenomenon, evolved in the passage of time in a fashion similar to written text, according to the gravity and interest that its users placed upon it, up until the very end of its existence in the 4th century A.D.

Let us return to the case of AGN; why did it disappear from Greece, the place that gave birth to it, elaborated it the most, and the only European culture to have used it? Greek language was widely spread and used after the Hellenistic period, and the Greek alphabet was still very much in use, and still is. If Codal Interference was the case, what socio-cultural norms have changed to put AGN's survival in peril? If a society exhibits characteristics of what may be termed a 'literate culture', it is worth investigating comprehensively and historically all aspects of music notation appearing in texts, apart from the notes themselves. A wealth of information may be found, ranging from the culture's (probably) extinct music to musical instruments, its theories on systems of pitches and modes and most importantly facts about its social contexts. The latest manuscripts of Ancient Greek notation are from the end of the third century to the beginning of the fourth century AD. During that time the Roman Empire had just come out of the Imperial Crisis of the 3rd Century that had lasted 50 years and would proceed to a complete makeover of its society, economic life, and

most importantly culture and religion. I will not go as far as Gibbon to support the belief that Christianity was the bane of the entire ancient world.[105] I could side with Holleman[106] though, who suggested that this case might be true for Ancient Greek notation. The rejection of contemporary pagan music extended to such a degree that any/the existing Greek notation systems were not considered for the transmission of Christian music. In view of the Church's universal mission, musical tradition which is a key cultural transmitter could not be set free. On the contrary, as a liturgical constituent of primary importance, the musical tradition was to be watched over with 'unceasing vigilance'.[107] A new notation system gradually developed, leading to the neumatic musical script. Therefore, the new religion might be one reason for the alterations of the existing socio-cultural norms that, in turn, led to the disappearance of Greek notation.

Ancient Greek Notation did not disappear because it was just impractical as a system for transmitting the new dominant musical style which was melismatic in nature (Codal Incompetence); despite the fact that it was labeled as impractical by Aristoxenos,[108] the principles of alphabetic notation have survived in Asia until today after all. It also disappeared because it represented an ideology that was no longer compatible with the society using it (Codal Interference). Although the language (Hellenistic Greek) and written form (Greek alphabet) were the same, all reasons for composing and performing Ancient Greek Music (and thus using AGN for its notation) were gone: the ancient Olympic Games where songs were sung for winners and as dedication to the Gods had stopped by 393 AD when they were banned by Theodosius I as part of the campaign to impose Christianity as a state religion. Ancient Greek and Roman theatres seized to function by the 5th century AD and

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[105]Gibbon, E. (1776-1781-1788). *The History of the Decline and Fall of the Roman Empire.* Ed. Womersley D. Penguin Books 2000.

[106]Holleman, A. W. J. (1972). The Oxyrhynchus Papyrus 1786 and the Relationship between Ancient Greek and Early Christian Music. *Vigiliae Christianae,* Vol 26, No. 1 (Mar), pp. 1-17.

[107]In *A History of Byzantine Music and Hymnography* (Oxford, 2. ed. 1961) Egon Wellesz, p.68 states: 'The hostile attitude of the Church is easy to understand. From the second to the fourth centuries the members of Christian communities lived in the midst of a highly developed civilization and were tempted to take part in the theatrical performances, dances and processions they were constantly witnessing.'

[108]Aristoxenus described notation as a banausic skill. Aristoxenus. *Elements of Harmony.* 2. 39f. In Pöhlmann E., & West M.L. (2001): *Documents of Ancient Greek Music*. Oxford: Clarendon Press p.1. It has to be mentioned though that Aristoxenus' opinions deviated sharply from his predecessors, as stated by Chalmers, J. (1993). *Divisions of the Tetrachord*, Frog Peak Music. Chapter 3, pp. 17–22.

Greek *symposia* as well as Roman *convivia* would lose their character as celebratory feasts that included pagan beat music.[109] Tombstones would not have hymns to the Ancient Gods anymore, but the Christian symbol of the Cross.

This change was brought on by sociological upheavals, which in turn caused changes in most of Merriam's functions for music, and in turn changed the existing notational practice. If we are inclined though to find the reasons behind the development of systems which represent sound visually (literacy and music notation) in a potentially meaningful manner to society, we should not be searching amongst cognitive psychology papers, but instead look for those who developed these systems of communication first, for what reason, to whose benefit as well as for how widespread their use was – in simple terms, look at the sociological perspective of the matter in question. When the notational system in use demands its users' conformity to a syntactical practice which does not reflect its sonic counterpart, it could be argued that it holds back the users' artistic expression - particularly in the case of music notation which is often practised by people unaware of this implication. Just as AGN was incapable of depicting the new musical ideas of its time, it could be argued that WSN is barely capable of representing music composed in the twenty-first century by progressive composers and sound designers.

The next logical step is to examine in more detail the symbolic manifestation of communication in society, by focusing on socio-cultural variables that may affect communication. The development of literacy from a sociological perspective[110] bears many similarities to the evolution of notation:

i) If a writing system can be defined as any graphic means for the systematic representation of the spoken word, notation by the same token can be defined as any graphic means for the systematic representation of musical sound. Both systems did not rise fully developed, but followed a process of evolution.

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[109] 'The unavoidable impression we gather from all sorts of information, both Christian and Pagan, is that music as practiced in the era of the Roman Empire was a 'beat' –music in internationalized but manifold styles according to local origins but, imperturbably, 'beat.'' In Holleman, A. W. 1972, p.3.

[110] Diamond, J. (1997). *Guns, Germs, and Steel: A short history of everybody for the last 13,000 years*. London: Vintage, 2005 Chapter 12: Evolution of Writing pp. 215-238.

ii) In order to develop written music notation, a society must have successfully developed a coherent system of literacy.[111]

iii) Musical notation followed the path of literacy in the Eurasian axis: from Ancient Babylon to Greece; Europe in the West, to India; China; Japan in the East. Unlike literacy, it failed to rise in the New World autonomously as far as we are aware.

iv) At their infancy both systems (linguistic script and musical notation) were used by a minority of experts who safeguarded them as systems of communication amongst themselves. Social changes led either to a wider distribution of the coding knowledge, or to the loss of the coding systems, as seen with Ancient Greek notation, among others.[112]

v) Breakthroughs in technology such as the invention and development of the printing press have led to the wider distribution of writing and music notation.

vi) Notational systems (*if* they are native to the culture that created them) mimic written language in terms of directionality of script.[113]

Based on the fact that there is strong indication that cognition varies across cultures, culturally specific properties of music need also be addressed before presenting potential research goals.

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[111] There is only one exception to this rule. See Cesarino Pedro de Niemeyer (2006). De duplos e estereoscópios: paralelismo e personificaçãonos cantos xamanísticos ameríndios, in *Mana* v.12 n.1

[112] One example is the Dongba Pictographic Script of the Naxi people in Southern China. Milnor tells us: 'The Dongba pictographic script is clearly indigenous to Naxi areas, because of the particular flora and fauna it represents. From this early stage of development, Dongba pictographs diverged from Chinese and the world's other writing systems. Despite their extent of standardization, the pictographs have not been simplified nearly to the extent of any 'practical' writing. Quite the opposite of Chinese characters, the meanings of numerous Dongba pictographs are immediately obvious to the untrained observer. Why have Naxi pictographs not been simplified? Like the earliest Chinese characters, Dongba pictographs were used exclusively in ritual texts. Whereas Chinese characters were later applied to daily life, however, Dongba pictographs were not. Dongbas took the time to produce works of art for religious use — efficiency in production speed was not their top pragmatic concern.' In Milnor, S. J. (2005). A Comparison Between the Development of the Chinese Writing System and Dongba Pictographs. *University of Washington Working Papers in Linguistics*, vol. 24 eds. Daniel J. Jinguji and Steven Moran, Seattle, WA pp. 30-45.

[113]Musical cultures without scores exist of course, with an affluent repertory of music to satisfy even the most demanding ethnomusicologist, as seen from my fieldwork among the BenaBena. Another example of a musically rich culture without notation, among many others, is the Kalash tribe of the Hindu Kush mentioned earlier. See Parkes, P. (1997). *Personal and Collective Identity in Kalasha Song Performance: The Significance of Music-making in a Minority Enclave.* In *Ethnicity, Identity and Music*, Ed. Martin Stokes Berg: London, New York. pp. 157-187.

1.9. Socio-Cultural Variables

There are limited pieces of work[114,115] from the field of music psychology that offer insightful discussions of the relationship between cross-cultural cognition and specific musical properties, and also provide a methodological blueprint for testing several predictions pertaining to this relationship empirically. I have already tried to focus on the importance of integrating a variety of investigative methodologies from music psychology and cognition in order to bring to the foreground a possible method for examining the visual representation of musical qualities such as pitch, attack rate and duration as variable parameters in relation to time. Due to the dynamic and multi-varied nature of this research, a consideration of various other factors that may impact on musical behaviour is equally important. Some of these pertain to musical expertise and knowledge itself, while others have more to do with the socio-cultural environment that musicians operate in. These two kinds of variables, far from being mutually exclusive, are inextricably linked and may manifest themselves in a variety of guises. We might usefully conceptualize these types of variables as points on a continuum, with musical knowledge at one end and socio-cultural immersion at the other end. Figure 8 provides a graphic illustration of this continuum, presenting the variables that will be investigated in Chapter Two:

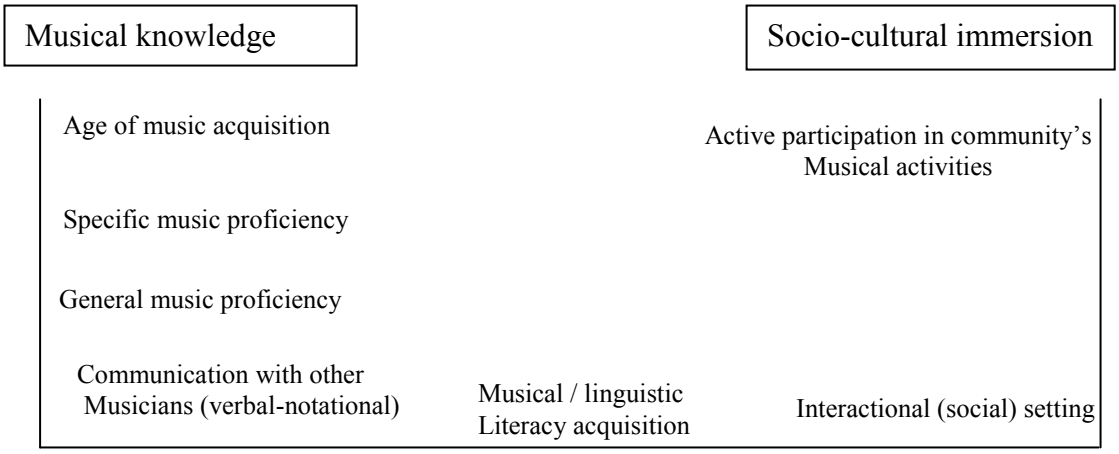

Figure 8: Continuum of musical and socio-cultural variables that may affect musical representation

[114] Bar-Yosef, A. (2007). A Cross-Cultural Structural Analogy between Pitch and Time Organizations. *Music Perception* 24(3), pp. 265–280.

[115] Krumhansl, C.L., Toivanen, P., Eerola, T., Toiviainen, P., Järvinen, T., Louhivuori, J. (2000). Cross-cultural music cognition: cognitive methodology applied to North Sami yoiks. *Cognition.* Jul 14;76(1) pp. 13-58.

A brief description of each variable is necessary in order to provide the reader with a more comprehensive understanding of the position of each variable on the continuum in Figure 8.

- **Age of music acquisition**: This variable has been placed towards the musical end of the continuum because development and mastery of music could well depend on maturational constraints, either because of a biologically determined 'sensitive' period for music acquisition, or due to gradual decline of general learning mechanisms throughout the lifespan. For this reason, the influence of this variable may not be directly observable, but instead it may be a mediating variable in the relationship between music proficiency and degree of cognitive restructuring.
- **Specific music proficiency**: Knowledge of the specific musical property under investigation. Elicitation of such knowledge takes the form of providing different picture descriptions to variable stimuli provided throughout the experimental procedure, in addition to examining whether participants have a different way of representing the sound quality in a different manner.
- **General music proficiency**: General level of competence in a musical style / notational system, through an introspective technique by asking participants to judge their own proficiency.
- **Communication with other musicians**: This variable sits in the middle of the continuum as it is characterized by both musical and socio-cultural factors. The degree to which a multi-style performer will use one of the particular musical languages at his disposal is undoubtedly dependent on the interactional context and the degree of immersion to a specific community. Increasing the opportunity to use the particular style due to these factors, in turn, will lead to increases in expertise in the particular musical genre and will potentially provide the individual with target-like examples of specific musical features.
- **Literacy acquisition in music / language**: It has been argued in the previous sections of Chapter One how literacy affects musical and linguistic mindsets.

- **Interactional (social) setting**: Performers and audiences may behave differently depending on the particular social / interactional setting they are engaged in. This echoes the discipline of Symbolic Interaction and George Herbert Mead's idea of *I and Me,*[116] which I will use as my method of analysing qualitative material (interviews, fieldwork notes and observations). The *Me* is what is learned in social interaction with others and through the musical environment: society's attitudes towards the role of music, once internalized in the self, constitute the *Me*. This includes both knowledge about the musical setting of the society and also about who the person is, his/her role as a musician: his/her sense of self. On the other hand, 'the *I* is the response of the person to the attitude of the community'.[117] *I* is the creative stimulus of the individual, though within the context of the *Me*. Mead argues that people do not blindly follow society's rules – which in our case would mean that musicians do not always conform to society's norm regarding musical practices. *I* would be the individual musician's response musical behaviour, which in turn reconstructs musical society, and so the definition of *Me* belonging to that society. Together, the *I / Me* form the musician's self. In relation to my understanding and subsequent definition of the three principles of symbolic interactionism, which I will present in the following section, I place *Me*, the social self, in second (social interactive) principle, the *I* in the third (modification, managing and transformative) principle, and the mixture of the two *I/Me* as the first principle, where individuals classify objects themselves. This classification is reliant on whether the I or Me is predominant - thus their viewpoint of the world (object) relies on whether they see themselves and their art as part of it (Blacking's idea of mixture between musicians and audiences) or detached from it (separating music between the performers and the audience). Later on in Chapter Two I will demonstrate a personal adaptation of Symbolic Interaction as my method, and use it in Chapter Four as I portray the results of my fieldwork investigation.

[116] Mead, G. H. (1967). *Mind, Self and Society*, ed. Charles W. Morris Chicago.
[117] Mead, G. H. (1967). p. 196.

- **Active participation within a community's musical / cultural activities**: Living in a setting where specific musical qualities / performance techniques are promoted could affect performers' social contributions; if they are suited best for another musical style and the option is available, they might have to relocate in order to find a community where their skills are better appreciated.

It must be pointed out that due to the dynamic nature of music, all, none or some of these variables may be found to influence musical behaviour to various degrees at different points of cognitive and musical development. If their influence is mediating or moderating rather than direct, then their impact may be very difficult to demonstrate in an experimental context, a cross-cultural one at that.

But to the extent that this is possible through the establishment of my method and methodology in Chapter Two for obtaining and analysing both quantitative and qualitative information, any study that wishes to address the relationship between music and script in performers should take the above variables into careful consideration. Although it is not obligatory to take into account all of these variables while engaging in research, this rationale helps put into perspective the entire fieldwork procedure as a primarily ethnomusicological – anthropocentric study, rather than a rigorous psychological analysis of quantitative data. The goal as always is to focus on the interaction between these variables and the visual representation of music on paper.

1.10. Conclusion for First Chapter - Scoring sounds: the visual representation of music in cross-cultural perspective

Is the need to visually represent sound (with text or musical patterns) a sign of pragmatism or a necessity? The relationship between image symbolism and notation is celebrated in Frederic Rjewski's statement that if music is presented to mankind through notation, it is only because people worshipped images—and images are not dead: they have a life and voice of their own. 'Image worship permeates our lives.

Notation becomes superfluous when images are put away.'[118] Chapter One provided the setting for this investigation: while acknowledging the major influence and input of music psychology and cognitive sciences on the matter of visually representing music, I hold that these studies have rarely taken into account the social sensitivities of their participants and how they may come to affect this aspect of transformation from one mode to another. Considering that the cognitive parameters most likely to affect this are variations in the perception of language, literacy, time, shape and music, my aim is to conduct a cross-cultural investigation in order to test how these parameters would affect the visual representation of music in relation to the cultures of the participants.

In the next chapter (Chapter 2) I intend to develop a consistent method for a fieldwork investigation by adapting research procedures presented in this chapter, combining existing elements where possible, and developing new ones where necessary.

[118] Rjewski, F., in Cage, J. (1969). *Notations,* Something Else Press, New York, p.120

Chapter 2 – Methodology and Method for quantitative and qualitative investigation

2.1. Introductory remarks on musical sound and visual representation fieldwork method

The method developed and presented in this chapter has at its basis two points: first, how musical communication is affected by cognition, perception and culture, and second, how it is manifested through symbols in society, whether these may be called notations or shapes. While developing a design that may appear to follow trends in music psychology, I tried to produce a method with as high ecological validity as permissible, taking full account of social and cultural sensitivities of my participants and how these may come to affect the aspect of transforming musical sound into visual form. As stated in Chapter One, my main scope is to investigate the visual representation of music in a cross-cultural perspective, and to demonstrate that musical representation is related to our perception of symbolic meanings, rather than as an outcome of cognition alone. It is a methodology not driven by results, but, as indicated above, rather by maintaining a high cultural validity.

Since I hold that obtaining information on cognitive musical function without considering cultural specificity is not accurate, I combined an empirical, controlled study, with field-based observation and participants' interviews. Both qualitative and quantitative research also draws from precedents in ethnomusicology and musical anthropology, as well as empirical music psychology research design.

In 1.5.4 I indicated how existing work suggests that the visualization of music may vary cross-culturally.[119,120,121,122] Based on this, I conducted two empirical studies in which I used original visual and auditory stimuli to collect data from a total of five sites in three countries, involving classically-trained musicians based in the United Kingdom; traditional Japanese musicians both familiar and unfamiliar with western

[119] Walker, A. R. (1987b). *Perception and Psychophysics* 42 (5), pp. 491-502.
[120] Sadek, A. A. M. (1987). *Council for Research in Music Education*, Bulletin No 91, pp. 149-154.
[121] Eitan, Z; Timmers, R. (2010). *Cognition,* vol. 114, no. 3, pp. 405-422.
[122] Prior, H. M. (2010): *1st International Colloquium on Universals in Music: Data, issues, perspectives*.

standard notation; literate Highlanders from Port-Moresby, Papua New Guinea; and members of the BenaBena tribe, a non-literate community in Papua New Guinea.

The first study, presented in detail in 2.3, was a free-drawing paradigm based strongly on Tan & Kelly's work[123] on the graphic representation of short musical compositions, and on representational strategies also deployed by Adachi,[124] Bamberger[125] and Barrett.[126] My participants heard up to 60 short stimuli that varied on three musical parameters (pitch, duration and attack rate). The instructions were to represent these visually, so that if another community member saw their marks they should be able to connect them with the sounds. These stimuli were created by seeking common musical elements in the variable parameters from all three cultures studied, using audio of real instruments (flute and drum). The reason behind this choice is that cultural sensitivity in cross-cultural research cannot be found in the neutrality of the signal, but through promoting common musical parameters found among the groups under investigation.[127] The second study was a forced-choice design drawing upon previous research conducted by Walker,[128] Sadek[129] and Roberson et al[130] in which participants were required to select the best shape in order to describe a sound (24 trials). The order of the two studies in not accidental: I first wanted to investigate how participants would react to musical sound by themselves, without providing them a possible 'key' to the responses, particularly among the non-literate BenaBena community.

Additionally, apart from the above method to obtain quantitative results in support of my argument, through field-based observations and interviews I recorded how musicians engaged with the visual representation of music, taking into particular consideration the effects of literacy (as I suspected that it would influence the directionality of responses among literate participants) and cultural parameters such as the role and gravity that music performance tradition had in respective societies.

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[123] Tan, S., & Kelly, M. (2004). *Psychology of Music, 32*(2), p. 191.
[124] Adachi, M. (1997). Japanese Journal of Education Research, 27(1), pp. 25-36.
[125] Bamberger, J. (2005). *Musical communication*, pp. 143-170.
[126] Barrett, M. (2005). *Musical communication*, pp. 117-142, on p. 118
[127] See Blacking J. 1973.
[128] Walker, A. R. (1987b) *Perception and Psychophysics*, 42 (5), pp. 491-502.
[129] Sadek, A. A. M. (1987). *Council for Research in Music Education*, Bulletin No 91, pp. 149-154.
[130] Roberson, D., Davidoff, J., & Shapiro, L. (2008). *Journal of Cognition and Culture*, 2, pp. 29-53.

The entire design suggested a field experiment within a natural quasi-experiment: For the field experiment, I manipulated one independent variable: sound stimuli varying in one specific musical parameter at any given time, while maintaining the rest of the musical parameters stable. The dependent variables were the performers' own representations and forced choices. The quasi-experiment suggested that I was indeed conducting my fieldwork study in culture-based, stable environments. The operational variables were the differing originating cultures of the participants, which may or may not lead to differing representations of the sound stimuli.

Considering my axioms in 1.3, Tagg's communication model in 1.7 and the theory on symbolic interaction, elements of which I presented briefly in 1.9 and will present in depth in 2.7, I believe my position is clear enough in that I hold the visual representation of music to be an articulation of culture in addition to any possible cognitive effect. Figure 9 depicts my method in summary:

Development Stage (from researcher / emitter): Production of sound and visual stimuli within cultural parameters of groups	Action1 :Develop a free drawing paradigm: Left to the participants to depict directionality & form
	Action 2: Develop a forced-choice design based on Western viewpoint – two investigations: Directionality of script & melodic contour
Comprehension and processing stage (from participants / receivers): Rise of content within the visual representation from listener's perspective	Response to Action 1: Translation of musical sound by 'drawing' / choosing patterns and symbols = Articulation of Culture in visual form by participants
	Response to Action 2: Association of musical sound by selecting 'appropriate' symbols = cognitive representation of time through directionality of responses & importance of melodic contour

Figure 9: A tentative method on musical representation as an articulation of culture

2.2. Participants

In *Western Influences on World Music*, Bruno Nettl noted how western musical practices, and in effect western culture, transforms traditional societies and replaces or modifies existing norms.[131] Therefore, the need to find participants with as minimal exposure to western culture as possible made fieldwork abroad a vital part of the PhD research. Since exposure to WSN and musical culture might affect a performer's way of thinking and thus have an effect on his responses, participants were enlisted far afield. Common requirements for all performers were to be adults, of either a Grade 8 or equivalent in any musical instrument, or an active performance career of eight years minimum with the ability to demonstrate a high level of proficiency in any instrument of their own choice.

The first group (**Group A / pilot**) that took part were classically trained performers who were British nationals originating from a native British background, and based in the UK. Performers belonging to this group have been enlisted in Edinburgh, Scotland during April and May of 2011 through a call at the University of Edinburgh EUSA website and through notices on the Reid School of Music noticeboard.

The second group (**Group B**) consisted of Japanese music performers (fieldwork conducted, in person, in May and June of 2010) who were divided into two sub-categories. The first category consisted of highly trained masters of traditional Japanese music who had little or no experience of standard western notation, located primarily in Kyoto and Tokyo. In order to separate performers, I asked them to classify their knowledge in WSN in a scale of 1 to 7, with 1 depicting the least / no familiarity and 7 depicting system mastery. Only performers who placed themselves on 1 and 2 on the scale were placed in the 'traditional' group. I should argue at this point the impossibility to find Japanese musicians who have not been exposed to WSN at all. The term 'Japanese traditional performers unexposed to WSN' is used by convention here and in the subsequent chapters to refer essentially to individuals who might best be described as functional 'monolinguals' regarding Japanese music notation with minimal or non-existent proficiency in WSN. The second category consisted of students of traditional Japanese music from the Tokyo City University

[131] Nettl, B. (1985). *Western Impact on World Music: Change, Adaptation, and Survival*. New York: Schirmer Books.

of the Arts, who were familiar with both Japanese traditional notations in addition to western standard notation. Local contacts established in Japan were Professor Takanori Fujita of the Kyoto City University of Arts and Professor Miura Masayoshi of the Research Centre of Graduate School of Music at the Tokyo University of the Arts through the Consul General of Japan in Edinburgh, Mrs. Tarahara.

The third group (**Group C**) in Papua New Guinea (personal fieldwork, July, August, September 2010) was also divided in two sub-categories: The first sub-group consisted of musicians from the Highlands provinces studying or working in Port Moresby, and familiar with WSN. Here, I should point out that although most participants were located through the University and had been taught WSN, musicians – even those performing western-style music – rarely use any form of notation in performance. Local contacts were established through Mr. David Motsy, Head of Performing Arts and Mr. Daniel Jonerdhagtt from the University of Port Moresby. The second sub-group consisted of BenaBena tribesmen of the Eastern highlands region of Papua New-Guinea, unfamiliar with any literary or notational script. Contacts at the tribe were Mr. Yanameto Mopafi and Mr. Prutson, the local school teacher. The three participant groups may be seen together below:

Group 1 (Great Britain)	British nationals based in Edinburgh, United Kingdom Familiar with WSN, literate
Group 2 (Japan)	Japanese nationals based in Tokyo / Kyoto Familiar with WSN, JTN, literate in English, Japanese
	Japanese nationals based in Kyoto / Tokyo Familiar with JTN, literate in Japanese
Group 3 (Papua New Guinea)	Papua New Guinean highlanders (Eastern highlands, Western highlands, Southern Highlands, Cimbu, Enga) based in Port Moresby Familiar with WSN, literate in Tok Pisin, English
	BenaBena tribesmen based in Kenimaro, Eastern highlands Non-literate

Figure 10: Participant Groups

I mentioned earlier Bruno Nettl's work on the Impact of Western culture in world music. Similar to the expansion of the Latin alphabet, western standard notation has also, in many cases, replaced existing notational systems. Systems that 'survived' did so either because they demonstrated attributes that were too specialized to be adapted, or their users grudgingly refused to change, safeguarding them as they saw in WSN a force that could eradicate their performing rites and overall musical tradition. Therefore, in the paragraphs below I intend to demonstrate that the groups chosen were not selected at random.

Japanese traditional music is distinctively set apart from western euro-centric musical culture, and deploys elaborate notational systems which do not follow the analogue WSN format, but are either alphabetic or executive. The majority of these notational systems run vertical along the page, mimicking the traditional kanji script. The Iemoto teaching system in Japan (presented in detail in Chapter 4) is one of reasons these traditional systems survived. So, a written system of communication was in place, and different from the western ones. If the background of musical culture did affect the visual representation of music, traditional Japanese musicians were ideal participants for this investigation. Japanese participants familiar with the western system of communication would also take part; this would enable me to investigate whether the acquisition of WSN would in any way affect responses from their 'monolingual' musical counterparts.

Having a culture with a different written communication system is not enough; I also needed to examine whether a community with no written system of communication (neither literacy, nor musical notation) would respond. For the case of non-literate societies, no investigation exists on the perception of music notation in tribes residing anywhere in Papua New Guinea, Asia or the world.[132] Therefore, a tribe in Papua New Guinea, the BenaBena, was considered ideal as a non-literate community

[132] The only exception is the research from Pedro Cesarino among the Shipibo-Conibo Indians in the Amazon basin in 2006, also mentioned previously. Apparently the Indians seemed to make use of a notational system that functioned as a multi-directional mnemonic map, also used to depict semantic information as a proto-script. The system was a two-dimensional representation of information, but the information was not set in time. Cesarino did not try to test the system's applicability or functionality in practice. To my knowledge, the Shipibo-Conibo Indians are the only exception to the rule dictating that musical representation can only rise among literate communities. See Cesarino, Pedro de Niemeyer (2006). *Mana*, 12(1), pp.105-134.

outside the direct sphere of Western musical influence for this investigation.[133] Parallel to Papua New Guinean non-literate participants, it seems logical to seek participants familiar with WSN that originate from the same area (P.N.G. Highlands), and compare results with the first group.

2.2.1. Age of participants

A point worth mentioning is the age difference between participants, as well as differences between the groups regarding their years of performance and age of starting a musical instrument. The Japanese groups unfamiliar with WSN and the Papua New Guinean non-literate group were significantly older than the rest, in order to safeguard the parameters set in the section above (no knowledge of WSN for the former group; non-literate stage, no knowledge of WSN, little exposure to 'western' civilization). Table 1 below depicts the mean age of participants; their age when they started a musical instrument; and also how many years they have been performing music.

Table 1: Comparative age table for all participant groups

Participants	Mean Age In years	Age of starting a musical instrument in years	Years of performance
U.K.	23.4	6.7	15.7
Japan 1 (familiar with WSN)	27.9	8.5	22.6
Japan 2 (unfamiliar with WSN)	47.2	18.6	32.6
PNG 1 (familiar with WSN)	19.8	12.2*	8.5*
PNG 2 (unfamiliar with WSN or literacy)	57.2**	13.9**	42.2**

* = for Western music; longer for 'traditional' music ** = by approximation

[133] This is relative; missionaries have now reached even the most remote tribes in Papua New Guinea. The world that Stephen Feld investigated no longer exists, as within two generations Papua New Guinean societies have been radically transformed. I will explain this in detail in Chapter 4.

Participants were not matched for age. Arguably, this may have affected the results, as in some cases participants had age-related poor hearing and eye-sight, thus performing poorly overall in the forced-choice experiment. Cognitive psychology could even argue that sensory-motor skills would also vary between participants, leading to a differentiation of results not due to cultural variables, but due to age. This could be particularly true for the traditional Japanese musicians from Tokyo, largely recruited from a pensioners' care home. However, subsequent interviews which are presented in Chapter Four indicate that participants were highly conscious of their replies (or lack of them), removing any doubts from my part that they may be senile due to their advanced age. On the contrary, as the reader will soon realize, the qualitative analysis in Chapter Four, particularly from the elderly participants from Japan and Papua New Guinea, provide context offering a cultural setting for the quantitative results presented in Chapter Three.

2.3. Methodology for the free interpretation of Auditory Stimuli (Part One)

The first part of the test was based on a free-drawing investigation of musical sound, focusing on performer intuition. Its primary goal was to see whether performers were able to demonstrate sound (music) in any form, with a particular interest to see which method of representation they would follow (i.e. analogue, executive, pitch specific, prescriptive, descriptive, among others) and if they would deploy information along a time axis. This part of the investigation is closely influenced by Tan & Kelly's methodology in their 2004 *Graphic Representations of Musical Compositions,*[134] and to a lesser extent by Adachi,[135] and further by Bamberger and Barrett's methods employed in Miel, MacDonald and Hargreaves' *How the conventions of musical notation shape musical perception and performance.*[136, 137] Adachi, Bamberger and

[134] Tan, S., & Kelly, M. (2004). *Psychology of Music, 32*(2), p. 191.
[135] Adachi, M. (1997). Proceedings of the 4th International Conference on Music Perception and Cognition, McGill University, pp. 413-418.
[136] Bamberger, J. (2005). *Musical communication*, pp. 143-170.
[137] Barrett, M. (2005): *Musical communication*. pp. 117-142.

Barrett provided an innovative way in allowing their subjects (who were mainly children) to be able to create notational systems of their own 'invention' without being restricted to the pitch-over-time model which most organised notational systems follow. They requested their participants to provide a means of 'invented' notation of a familiar tune without any sense or guidance from the researcher. A number of participants mimicked the already existing standardized notational model; others used onomatopoeia and linguistic script to depict information (particularly common amongst Japanese children, as indicated by Adachi). Yet responses also included performance guidelines not closely associated to pitch, but rather in playing techniques and the aesthetics of the piece, while taking little consideration of time values. However, the largest influence is Tan & Kelly's research on the representations of short musical compositions, where participants were requested to depict music in a two-dimensional space by 'drawing' a visual description of a sound event. Tan & Kelly used entire pieces of music, but did not take into consideration their participants' ethnic or cultural backgrounds – which I perceive to be a key aspect of this investigation. Perhaps it might be seen that a piece of paper could not be appropriate to 'fit' a participants' interpretation of a sound-sign; [138] when considering alternatives, this approach might be seen as restrictive or relatively guided by the parameters of the investigation. However, I believe that it is suitable to examine the task in hand. By creating stimuli relevant to the cultures examined and giving directions to the participants which would not limit their creativity, an analysis of the data, in terms of the musical parameters involved versus time and directionality would be possible. As seen in Figure 9, and indicated above, this free-drawing paradigm would enable participants to depict their responses in a way that would permit me to test Boroditsky's results (see previous chapter) regarding time perception according to culture through music.[139,140] The argument is as follows: if time perception is affected by culture, perhaps the representation of time, in a free-drawing musical paradigm, may show its traces. Although the claims regarding

[138] I mention this compared to Eitan and Grannot's approach, where participants were asked to depict musical pieces through physical movement. See Eitan, Z., & Granot, R. Y. (2006): *Music Perception,* Vol. 23, Issue 3, pp. 221-247.
[139] Boroditsky, L. (2001). *Cognitive Psychology*, 43(1), pp.1-22.
[140] Boroditsky, L. (2011). *Scientific American*, February 2011.

directionality and its relationship to time have faced criticism,[141,142] this design permits all responses, who in turn will be classified in Chapter 3 according to their representational strategy. Additionally, the influence of existing notational models could be examined in their environments, and see how these may affect participant responses.

2.3.1. Things to consider while developing the sound stimuli

In order to avoid possible cultural discrepancies to comprehend the auditory stimuli in terms of timbre, three possible solutions rose: to create the sounds using native instruments to the subjects tested, use musical software to generate a sound bank, or use an instrument existing in all three cultures. The first option might yield results which are closer to the participants' perception of musical sound, so this fact alone might be enough for us to select it. However, the obvious problem arising is that of inconsistency; if one of the key parameters of sound (timbre) has been altered, it could mean that any comparisons between the results may be considered impossible, as relative examples may have been similar, but not identical. In the second case (using computer-generated sounds such as sine waves), it has been demonstrated through Blacking's experience regarding cultures in Africa that participants may not consider 'artificial' sound to be music, though they do offer significant advantages as they are easy to be controlled and replicated. To be more specific, there could have been a possibility that Group C (Papua New Guinean participants) would prove to be unresponsive to a sound that does not relate to their auditory experiences, or even to the idea of representing sound at non-sonic level as a whole. This obstacle might could have been difficult to overcome in the field, since pilot tests conducted with Kalasha musicians (a tribe from Northwest Pakistan which acquired literacy only

[141] Chen, J-Y. (2007). Do Chinese and English Speakers think about time differently? Failure of replicating Boroditsky (2001) *Cognition* 104, pp. 427-436.
[142] January, D., & Kako, E. (2006). Re-evaluating evidence for linguistic relativity: Reply to Boroditsky (2001) *Cognition* (2006), doi:10.1016/j.cognition.07.008.

recently, therefore a large number of the population remain at a non-literate state)[143] were unable to comprehend the notion of 'picturing' music, even if they were fully capable of understanding how linguistic script works, perhaps due to poor directions on wording.[144] On the other hand, the same pilot tests run with Senegalese musicians, residing in France, had more positive approach. If the notion of harmony and melody that the relative pitches of the sound stimuli is also taken into account, the task at hand could have been rather complicated than predicted earlier.

Taking Blacking's work among the Venda into consideration, in order for musical stimuli to be able to be used cross-culturally, they should not be devoid of culture - I hold that there is nothing more unmusical to the sine waves and strict methodologies often employed by music psychologists, despite the fact that they offer considerable control of various sound-related variables as stated above. The best possible solution would be to attempt to incorporate common cultural elements from all sites examined. Therefore, the last option would be to make use of instruments and musical patterns that exist in all three cultures. This would also mean that the sound stimuli had to be of relatively short length, and rather over-simplified in terms of pitch complexity and variation. As a result, flutes and drums were selected to represent sound, as they are in use in all three cultures in some form: standard flute in western music, shakuhachi and others in Japan and either pan-flutes or traverse flutes used in most of the Papua New Guinean tribes of the highland regions. Alternatively, I could have used idiophone or mebranophone drums, but I would have to sacrifice pitch versatility, in addition to the difficulty of developing the sound samples. For examining attack rates, I decided that drums would be the most suitable choice so as to limit any possible distractions from the fact that a melodic instrument (such as the flute) would not be used in this context.

[143] Mela-Athanasopoulou, E. (2011). First steps to Endangered Language Documentation: The Kalasha language, a case study. *Indian Journal of Applied Linguistics* Vol 37, no2, Jul-Dec., pp.81-100.

[144] The significance on wording will be made more prominent in Chapter Four.

2.4. Method for the free-drawing investigation (Part One)

Subjects were exposed up to sixty sonic events. Each event had total time duration of up to 4 seconds. The sound stimuli were manipulated in terms of pitch, duration (musical articulation) and tempo (attack rate). They varied in one musical parameter at a time (i.e. pitch) while maintaining the other two stable (duration and tempo). Participants were asked to 'represent the sound on paper, so that if another member of their community saw their marks, they should be able to connect them with the sound'. These directions were considered appropriate so as not to hinder participants' creativity, while at the same time introducing a method of maintaining and promoting social cohesion.

2.4.1. Pitch

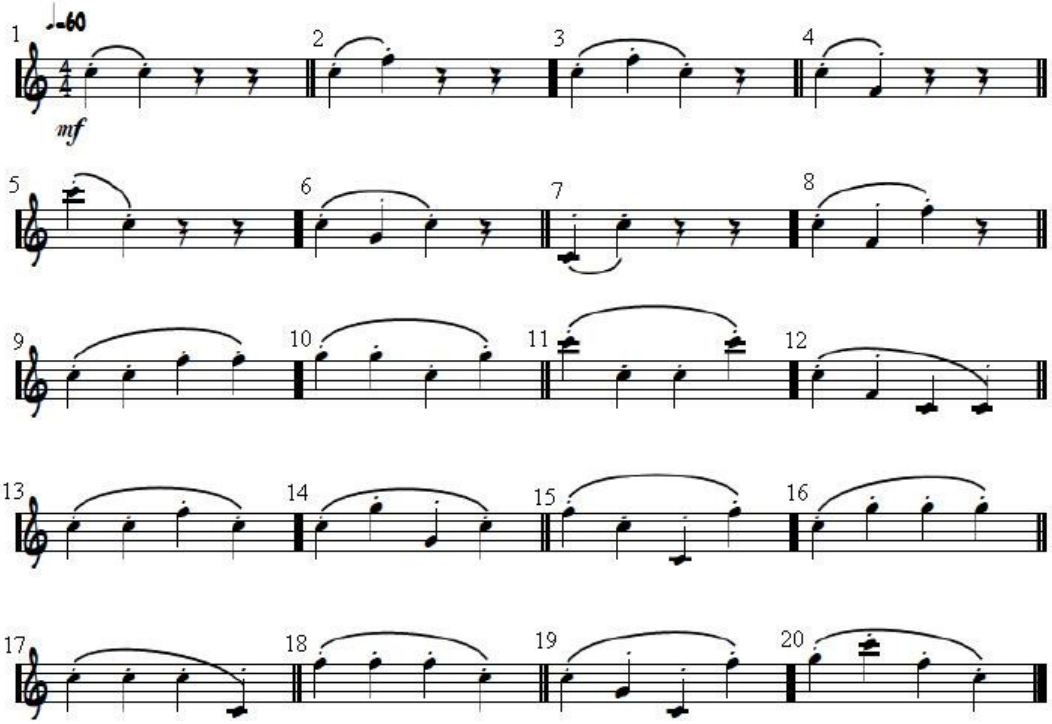
For the examination of pitch, I considered that both standard scales used in Western tonal music (Major-Minor) and well as the Japanese In-Sen and Hirajoshi scales were similar, but their melodic patterns were not; therefore I limited the musical examples to non-melodic patterns of music in order to avoid any specific cultural references. In addition to this, native Papua New Guinean music from the Highlands provinces does not follow elaborate melodic patterns other than the pentatonic scale, favouring rhythmical complexity instead.

This could mean that the pitch relations of the melodic examples were limited to 4ths, 5ths and Octaves. The stimuli were developed using Sibelius 6 software (Avid, 2009), exported as MIDI files at a tempo of 60 beats per minute, and produced using Digidesign Pro Tools 8 (DigiDesign, 2009). They were recorded in MP3 format and replayed to the participants with a Samsung K5 MP3 player through the in-built (slide-out) stereo speakers.

The samples may be seen below in Table 2:

Table 2: Pitch Variations

Variables	
Pitch	Testing
Volume	Stable 52dB
Duration	t – 1 sec.
Tempo	♩=60

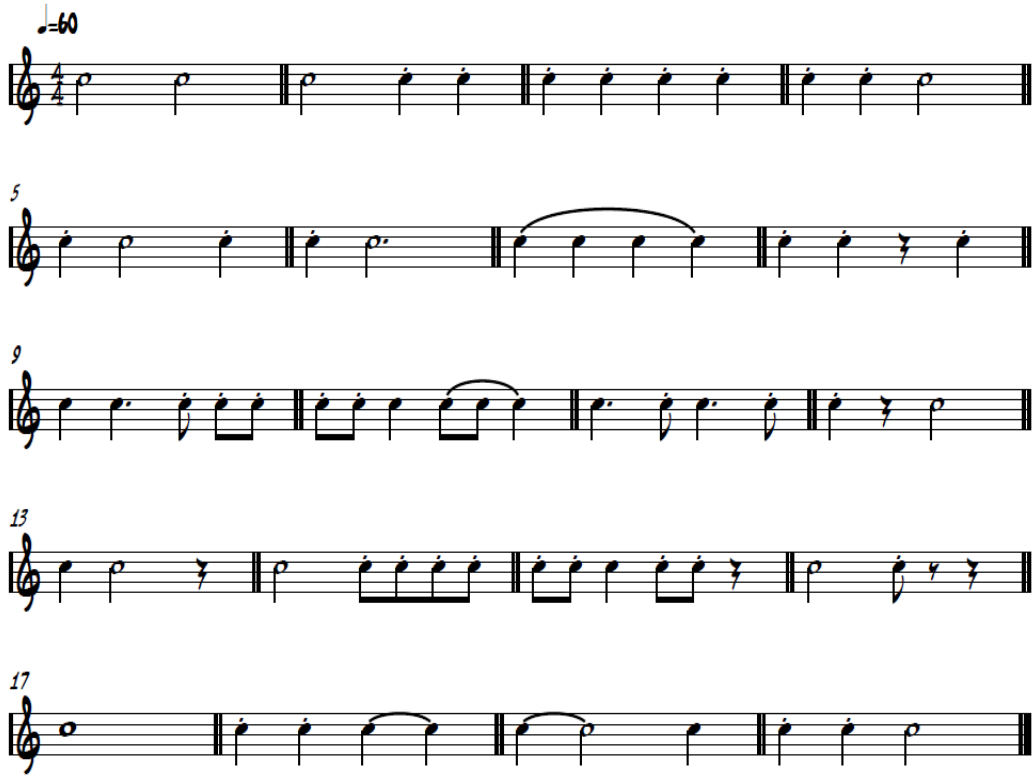


2.4.2. Duration (music articulation)

The stimuli regarding sound durations were separated through variations in musical articulation in terms of *staccato* and *legato,* in relation to each individual example. All three cultures participating make use of staccato and legato techniques. The duration examples I created may be seen in Table 3 below:

Table 3: Duration Variations

VARIANTS	
Pitch	C (middle 440Hz)
Volume	Stable 52dB
Duration	Testing
Tempo	♩=60

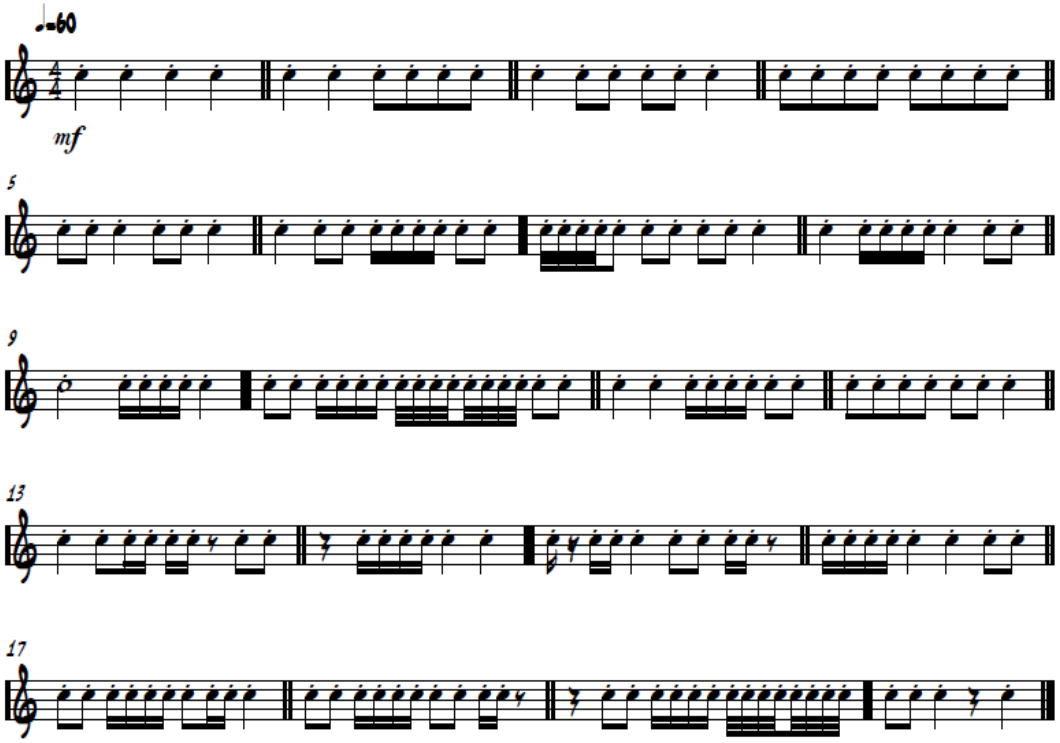


2.4.3. Attack rate

The stimuli regarding tempo variations were conducted at 60 beats per minute. All three cultures present musical pieces within this temporal range so ideally participants would not have any considerable difficulty in associating themselves with the stimuli. The sound for this particular experiment was a standard drum kit. The attack rate variations created may be seen in Table 4 below:

Table 4: Attack Rate Variations

VARIANTS	
Pitch	C (middle 440Hz)
Volume	Stable 52dB
Duration	stable
Tempo-attack rate	♩=60 variant



2.5. Methodology for the forced choice representation of auditory stimuli (Part 2)

The second part of the test was carried out after participants responded to the first stage of the experiment, which effectively meant they were able to produce visual / textual representations of sound unassisted, without receiving any guidance as to how to respond to the investigation. The nature of the current study would not consider it beneficial to instruct participants using means foreign to them in order to obtain results which might not reflect their own culture. The primary goal for this

part was to see whether performers of different cultural backgrounds demonstrated any preference in combining specific auditory stimuli with visual stimuli, taking particular notes regarding preferences in horizontal or vertical directionality and musical articulation (legato & staccato). There are at least four research papers from which I draw elements for the method, two of which deal directly with music and shape in cross-cultural context. [145,146,147,148]

The forced-choice design of Part 2 varied in two musical parameters: pitch and attack rate, using flutes and drums as the instruments of choice respectively, for similar reasons to the free drawing investigation. Variations in attack rate focused on testing the participants' perception of directionality of script: horizontal, with a left/ right or right/left direction, or vertical, with a top/ bottom, or bottom/top direction from a pre-determined, 'invented' notational system by me based on a western visual perception of musical representation. Variations in pitch aimed at testing whether participants would perceive staccato and legato techniques to have a different mode of representation. They did not test horizontal versus vertical directionality but only horizontal left/right and right/left directionality, as no analogue vertical system of representation exists; had I presented examples of visual stimuli depicting analogue representations moving vertically along the page, they would have been dismissed by western participants as they were already familiar with the idea of analogue representation, thus giving them an advantage over participants from Groups B and C unfamiliar with this form of representation.
In general, I cannot support that analogue representation is the logical preference, even by non-western participants, until performers explicitly demonstrate this tendency on their own in the free-drawing paradigm.

[145] Walker, A. R. (1987b). 42 (5), pp. 491-502.
[146] Sadek, A. A. M. (1987). *Council for Research in Music Education*, Bulletin No 91, pp. 149-154.
[147] Roberson, D., Davidoff, J., & Shapiro, L. (2008). *Journal of Cognition and Culture,* 2, pp. 29-53.
[148] Gentner, D., Imai, M., & Boroditsky, L. (2002). *Language and Cognitive Processes*, 27 (5), pp. 537-565.

2.6. Method for the forced choice representation of stimuli (Part 2).

Participants were exposed to twenty-four sonic events with durations of up to five seconds which varied in terms of pitch, musical articulation and tempo, and a sheet with eight different visual stimuli for each event. The sonic events were repeated once. Participants were asked to select an image that best suited the sound event from the ones provided in the sheet. The visual stimuli were made to reflect the sound events as demonstrated in Tables 5-11below.

Variations among the different images focused on i) horizontal directionality (for musical examples having pitch as the variable parameter) and horizontal / vertical directionality (for musical examples having attack rate as the variable parameter) in order to test parameter / time association; ii) lines and dots (where lines stand for legato articulation and dots stand for staccato articulation) in order to test any potential preferences in depicting articulation with a 'Western' representational technique; and iii) proximity of objects in order to test tempo/attack rate as seen below:

Table 5: Pitch and attack rate variations for forced-choice part

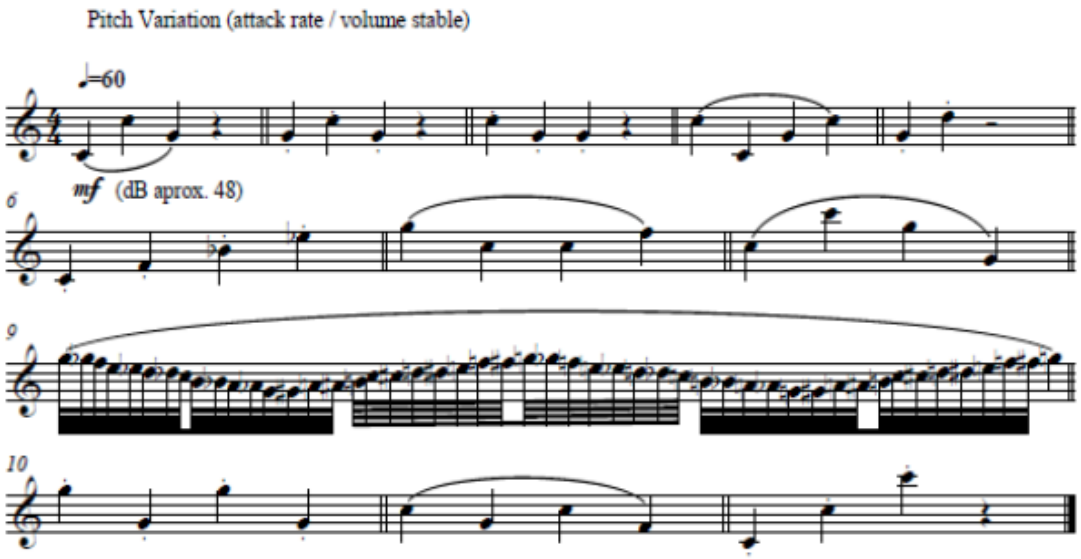
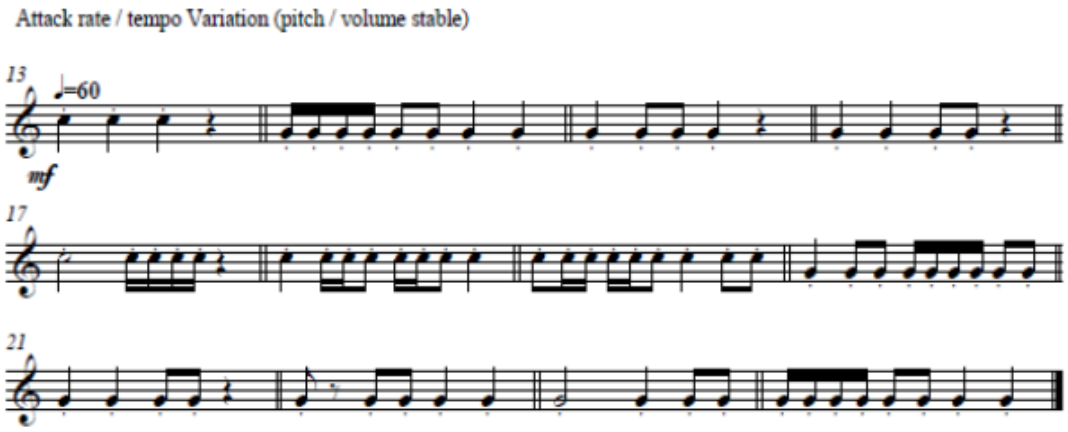


Table 5 cont. Pitch and attack rate variations for forced-choice part



2.6.1. Pitch variation / musical articulation variations

Eight visual stimuli were provided for each sound sample. For the first series of examples (variable parameters: pitch / musical articulation; stable parameters: attack rate / volume / duration) one stimulus reflected the sound sample used as a graph chart with time (seconds) on the x axis and pitch represented on the y axis, having as 0 the middle C (261.63Hz), 1 as C sharp (277.18Hz) as seen in Table 6 below.

Table 6: Pitch in Hertz

C_4	$C^{\#}_4/D^{b}_4$	D_4.	$D^{\#}_4/E^{b}_4$	E_4	F_4	$F^{\#}_4/G^{b}_4$	G_4	$G^{\#}_4/A^{b}_4$	A_4	$A^{\#}_4/B^{b}_4$	B_4
0	1	2	3	4	5	6	7	8	9	10	11
261.63	277.18	293.66	311.13	329.63	349.23	369.99	392.00	415.30	440.00	466.16	493.88
C_5	$C^{\#}_5/D^{b}_5$	D_5.	$D^{\#}_5/E^{b}_5$	E_5	F_5	$F^{\#}_5/G^{b}_5$	G_5	$G^{\#}_5/A^{b}_5$	A_5	$A^{\#}_5/B^{b}_5$	B_5	C_6
12	13	14	15	16	17	18	19	20	21	22	23	24
523.2	554.37	587.33	622.25	659.26	698.46	739.99	783.99	830.61	880.00	932.33	987.77	1046.5

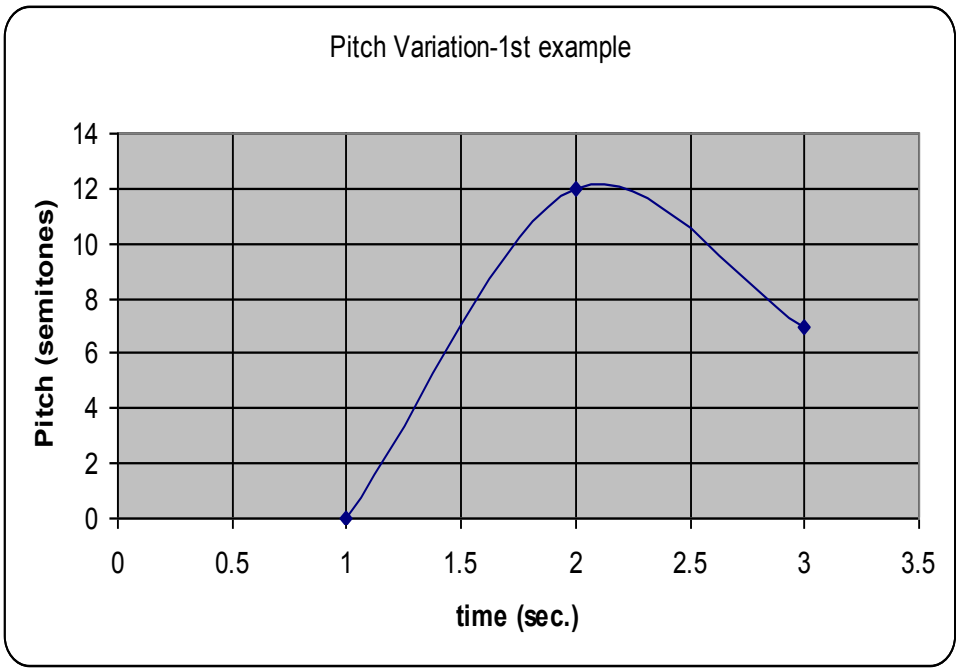
For the first bar of Table 5 the following pitch class sets can be heard in the following table (Table 7):

Table 7: Example

Volume		stable		
Articulation		legato		
Pitch	C_4	C_5	G_4.	Rest
Nu.	0	12	7	-
t(sec)	1	2	3	4

If the above pitches are shown as a frequency-time diagram, the following image can be obtained, as seen on Table 8. By joining pitch variations in the grapheme with a continuous line I indicated the articulation of *legato* as seen on Table 8, while by not joining the pitches I indicated the *staccato* articulation.

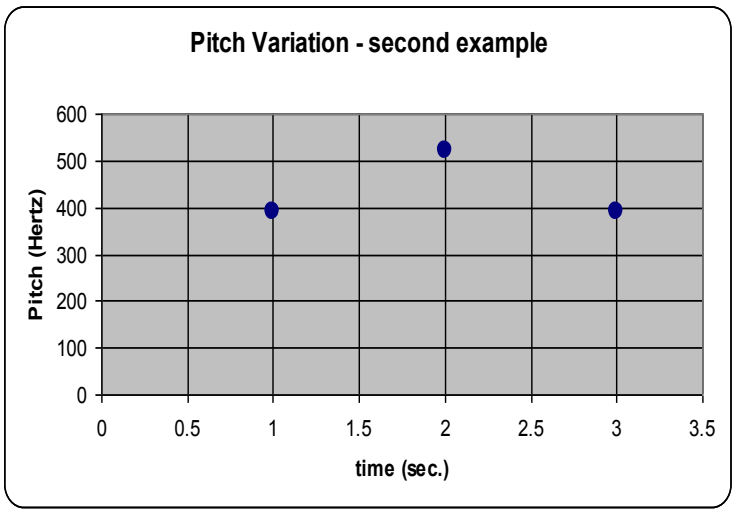
Table 8: Pitch variation represented linearly, indicating *legato* articulation



Similarly, the second example would appear as shown below:

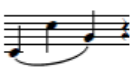
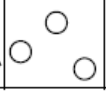
Table 9: Pitch variation represented with points (dots), indicating staccato articulation

Volume		stable		
Articulation		staccato		
Pitch	G_4	C_5	G_4.	Rest
Nu.	7	12	7	-
t(sec)	1	2	3	4



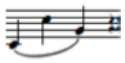
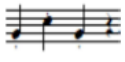
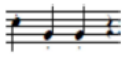
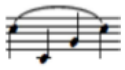
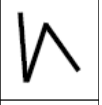
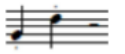
The other seven visual stimuli for the first example were depicted as seen on Table 10: One was the original grapheme with different articulation marking (image A6), one was an inversion of the original on the y axis (image A8) and one was an inversion of the different articulation on the y axis (image A4). If a sound sample's inversions produced identical shapes (as the horizontal inversion of B) then these were omitted. The other four were random shapes. The order of the shapes has been randomized to avoid an order effect. Therefore, in the case below in Table 10 I would expect participants from a western background to favour the first shape.

Table 10: Linear and point - representation of pitch with horizontal l-r and r-l modifications

ltr.	WSN	Operational	1	2	3	4	5	6	7	8
A		leg.C4, C5, G4, R					I I I			

The two columns marked ‘WSN’ and ‘Operational’ were not included in the handout given to the participants. They were only given the first column marked ‘ltr’ (letter) plus columns 1-8. For a collective table, see Table 11 below.

Table 11: Collective table for forced choice representation of pitch

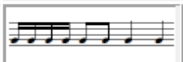
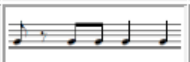
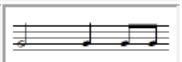
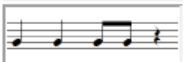
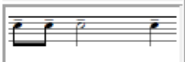
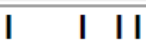
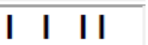
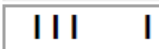
	WSN	Operational	1	2	3	4	5	6	7	8
A		leg.C4,C5, G4,R								
B		stc.G4, C5, G4,R					3			
C		stc.C5,G4, G4, R								
D		leg.C5, C4, G4, C5								
E		stc.G4, D5, R, R							I I	
F		stc.C4, F4, Bb4, Eb5								
G		leg.G5, C5, C5, F5								
H		leg.C5,C6, G5, G4								
I		leg.G5,G4, G5, G4								
J		stc.G5, G4, G5, G4			4					
K		leg.C5,G4, C5, F4								
L		stc.C4, C5, C6,R								

2.6.2. Attack rate variations

Similar to the procedure for the pitch / articulation variations, eight visual stimuli were provided for each sound sample for the attack rate / visual stimuli investigation. For this second series of examples (variable parameters: attack rate; stable parameters: pitch / musical articulation / volume / duration) one stimulus reflected the sound sample, placing time (seconds) shown on the x axis and attack rate shown as proximity between each sound event. In WSN note values are indicated by using the colour or shape of the note head, the presence or absence of a stem, and the presence or absence of flags, beams and hooks. Rests (silence) are also indicated by symbols of an equivalent duration.

This experiment demonstrates sonic events by vertical lines < **|** >, independently following a similar methodology carried out by Bruno Repp, Keturah Bixby and Evan Zhao on their 2011 research entitled: *'Does Note Spacing Play Any Role in Music Reading?'* [149] Repp, Bixby and Zhao used the musical software Sibelius 5 to create musical samples, then removed note-heads and asked musically literate participants of unspecified cultural background if they could recognise which attack rates were suggested. The distance between two vertical lines indicates the sonic events' attack rate, while the absence of a line demonstrates a rest. The minimal spacing equals one semiquaver 𝅘𝅥𝅯. See examples below in Table 12:

Table 12: Representation of attack rate

Attack rate	A	B	C	D	E
WSN					
Symbolic					

One of the eight visual samples provided followed the parameters demonstrated above. For

[149] Repp, B., Bixby, K., & Zhao, E. (2011). *Does Note Spacing Play Any Role in Music Reading?* Poster presented at the 11th CPMC, Rochester New York. Repp et al tested musicians' abilities on how well they would be able to link specific sound stimuli with the visual stimuli. Their results were analogous to their musical training.

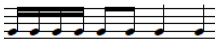
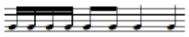
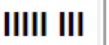
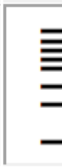
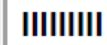
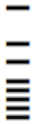
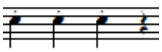
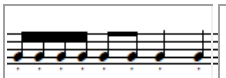
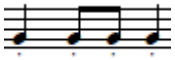
example, the rhythmic phrase  would appear as  (Table 13, column 3, below). The other examples were: the inversion of column 3 (column 5); shifting time on the y axis (column 2); the inversion of column 2, as shown in column 7; and four random patterns (columns 1, 4, 6, 8), as seen below:

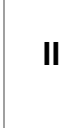
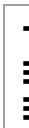
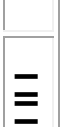
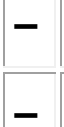
Table 13: Representation of attack rate with variations in directionality

WSN	1	2	3	4	5	6	7	8
								

Similar to the forced-choice representation of pitch table, the order of the shapes has been randomized to avoid an order effect. If a sound sample's inversions produced identical shapes (as the horizontal and vertical inversion of J) then these were omitted. Table 14 below contains the examples for all the variations of the forced-choice representation of attack rate. Participants were given columns 1-8, without the WSN column.

Table 14: Conclusive table for forced-choice representation of attack rate

WSN	1	2	3	4	5	6	7	8
 A								
 B								
 C								

D								
E								
F								
G								
H								
I								
J								
K								
L								

Examples B and L, as well as D and I are identical with regard to their musical examples but vary slightly as to the visual stimuli provided. The reason behind this is to establish whether participants would experience any order effects.

2.7. Method of analysing qualitative information.

2.7.1. Symbolic interaction: A personal adaptation

The principal method of collection of my qualitative material was through participant observation and semi-structured interviews carried out on location in Edinburgh, Kyoto, Tokyo, Port Moresby and the BenaBena villages. In order to detect patterns of communication, interpretation and adjustment between individuals and the societies that they are part of, I employed George Herbert Mead's symbolic interaction model in the analysis of my qualitative material. Within this approach, people interpret or 'define' each other's actions rather than react to each other's actions. Their response is based on the meaning of the actions, rather than to the actions themselves. This way, the representation of music in a two-dimensional method is seen as a reality being understood within a social, developed interaction among its users and not just as guidelines from the composer to the performers. This way, human interaction through the musical score is mediated by the use of symbols (as in notation) and their interpretation, or by ascertaining the meaning of non-verbal, written musical communication. Music as such is understood as a process of interpretation between stimulus (notation) and response (to the score). Keeping this in mind, the model is versatile enough to be deployed for all three cultures as a method of analysis.

For symbolic interaction, as proposed by Blumer[150] and used throughout my future qualitative analysis, there are three core perspectives of reality within society:

[150] Blumer, H. (1969). *Symbolic Interactionism: Perspective and Method.* University of California Press: Berkeley, Los Angeles, London.

1 ‘Humans act toward things on the basis of the meanings they ascribe to those things’

– which in essence I take it be understood as a physical objective reality,[151] focusing on the interaction between the musician / performer and the musical world. Within the realm of musical representation, this is understood to mean that notation is seen as a product of the musician’s disposition to action in response to a stimulus which evokes performance. The musician, surrounded by a musical environment of pre-existing tradition that indicates how he/she should behave, concentrates on his/her ability to construct his object of interest (musical notation) on the basis of her on-going activity of notating musical stimuli within the notational norm (or absence of it) of his culture. The musician is designating the object (musical notation) to her outer self, giving it meaning by judging its suitability to the action at hand and keeping in mind my potential directive guidelines for the experimental procedure (such as ‘create a visual representation of the musical stimuli you are listening to, so that if another person of the community sees it they would be able to connect it to the sample you just heard’), making decisions on the basis of this judgment. This is defined as acting on the basis of meaning ascribed to the notation created first by him/her: the notator - participant.

2 ‘The meaning of such things is derived from, or arises out of, the social interaction that one has with others and society’ – which, in essence, I interpret as a social reality, where meanings are derived through social interaction with others. The musician / performer and the musical world are in a dynamic process of exchange and not in a static relationship. The process of definition of the object always takes place in a social context. After the individual perception of any objective reality (music notation in our case), each individual aligns his/her action to the action of others by ascertaining what they are doing or what they intend to do – thus group action is an alignment of individual lines of action. The object (music notation) is seen at this second stage as a collective comprehension by people who use it as regards their actions and what they expect the object to do.

[151] Let us assume it exists, and avoid the deep philosophical discussion linked to this debate.

3 Meanings are handled in, and modified through, an interpretative process set by the person in dealing with the things he/she encounters – in essence I hold this to indicate that meanings are managed and transformed through an interpretive process that people use to make sense of and handle the objects that constitute their social worlds, such as an inner-understanding and processing. In effect this is the musician's / performer's ability to interpret the music within his society. This meaning is built and modified step by step, evaluated and confirmed by the musician as he/she proceeds through the notated musical world by means of the basis of the meaning that he has given to it in the first principle.

Instead of the musician being surrounded by a musical environment of pre-existing tradition that indicate how he/she should behave, as a result of my quantitative experimental procedure I concentrate on his/her ability to construct his object of interest (musical notation) on the basis of his/her on-going activity of notating musical stimuli that vary on specific musical parameters. The musician is designating the object (musical notation) via his/her inner self, giving it meaning according to his/her needs, judging its suitability to the action at hand, and making decisions on the basis of this judgment. This is defined as acting on the basis of meaning ascribed to the notation created by his inner understanding and processing of the task requested. These three perspectives are in circular motion, as seen in Figure 11:

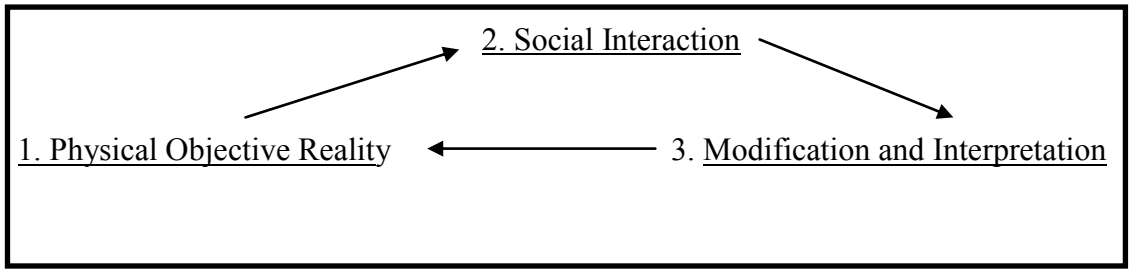


Figure 11: Continuum of musical and socio-cultural variables that may affect musical representation

2.7.2. Symbolic interaction and possible manifestations in music

I hope the analysis of the qualitative material under the above three perspectives of symbolic interaction, as I have adapted them for the needs of my research, will elucidate varying cross-cultural perceptions of music notation, and will make it

possible for the reader to understand what the written aspect of music *means* for western and non-western musicians alike at a personal level, at society level and at the inner-interpretative level.

The qualitative analysis of the results will focus on the precise and explicit documentation of thoughts on notation as a regulation of pitch, duration and attack rate in relation to time for the three musical cultures studied. The discovery of possible similarities between unique musical traditions is one goal, as well as the comprehension of their equally significant differences. After all, why is it that while both classical and traditional music appear to place such value on the precise measurement of time within the score, practitioners of the former on occasion use chronometers to regulate time while they play, while the latter bend time at will even as they count off the beats aloud in performances? Japanese Noh ensembles are 'expected' to bend time in performance, even if the score does not dictate it. As solo artists in traditional Japanese musical styles such as the Heike Biwa or the Sakuhachi, time regulation appears to be equally free. As for Papua New Guinea, a manifestation of musical time among the most culturally diverse country in the world with eight hundred and forty-one languages[152] is a matter that requires a book in itself; while 'beat' remains unaltered for energetic sing-sings,[153] rubatos seem to be the norm for initiation ceremonies.

Another question emerging is in what ways music's temporality is affected by improvisation. While fundamental to most aspects of traditional music, somewhat present in Western classical music, it is relatively non-existent in Japanese traditional Noh music.

I will analyse these examples in depth later on as I proceed in the analysis of participant responses within the symbolic interaction template. Blacking stated that 'Music confirms what is already there in society and culture, and adds nothing more than patterns of sound'.[154] If this statement is even partially accepted, music would work as a mirror for its society of origin: it confirms what is already present in culture. As such, through the investigation of possible representations of music in

[152] See Ethnologue report for Papua New Guinea online at http://www.ethnologue.com/country/PG/languages

[153] Sing-sings are cultural shows in Papua New Guinea, were local tribes are called to show their distinct culture, dance and music.

[154] Blacking J. (1973). p.54.

these distinct cultures through symbolic interaction, certain conceptions regarding music become involved as well: the role of the composer and of the musician in the community, as well as any logic (or absence) of music notation. I hope with what I present individually for each culture studied during my fieldwork investigation and by comparing results later on, I will contribute to answering the matters above.

2.8. Conclusion, weaknesses and a prelude to the qualitative investigation

I am aware that in any combination of exploratory approaches there are weaknesses and disadvantages: quasi-experiments are not famed for their internal validity, and any potential researcher attempting to replicate my investigation might not get similar results if s/he carried out this investigation with participants originating from different cultural / musical groups as the musical stimuli have been created for the particular cultural groups taking part in this study.

As I have mentioned previously, there was always the case that Group C (Papua New Guineans) might have proven unable to process any of the data: they might have demonstrated diverse behaviour, leading to inconclusive results even for common cultural backgrounds. This was not regarded so much as a problem but as a possible reality – especially since the representation of music was not yet known amongst the BenaBena.

Still, I believed that if I conducted my investigation in the participants' natural environment and they were given time to familiarize with the idea, credible data could be obtained;[155] Chapters Three, Four and Five suggest that this rationale was correct.

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[155] Debbie Roberson had similar difficulties when working among the Dani tribe in Papua New Guinea, and the Himba tribe in Namibia. Participants needed considerable time to get acquainted with the experimental procedure and the stimuli presented to them. See
Roberson, D., Davies, I., and Davidoff, J. (2000). Colour categories are not universal: replications and new evidence from a stone-age culture. *Journal of Experimental Psychology: General,* 129(3), pp.369-398. and Roberson**,** D., Davidoff, J. & Shapiro, L. (2002) *Journal of Cognition and Culture, 2*, pp.29-53.

From the more practical point of view there were certain factors that were taken into consideration: I aimed to have at least twenty to twenty-five participants for each subgroup. As for the number of trials before a participant became familiar with the procedure, I usually permitted two stimuli for each parameter. Bearing in mind that interest in the task might not be of sufficient time - which was particularly true for the case of the BenaBena tribe - I had to keep the experimental procedure less than 25 minutes. Limited time also proved to be the case for a minority of the Japanese traditional performers based in Kyoto, who were not particularly welcoming to a foreigner conducting research on what they consider to be a sacred art. In practice, both these fears were realized during my fieldwork study, and will be elaborated in more detail in Chapter Four.

Chapter 3 – Quantitative Results of the fieldwork study

In Chapter Three I intend to present my quantitative results from the five different participant sub-groups (classically-trained British musicians; Japanese musicians familiar with WSN; Japanese traditional musicians; Papua New Guinean highlanders familiar with WSN; BenaBena non-literate tribesmen) based on the methodology and method presented in Chapter Two, and draw the reader's attention to specific responses. Towards the end of this chapter I will compare results across groups, before I present my qualitative analysis of data in Chapter Four.

3.1. British Participants (Edinburgh, United Kingdom) - Pilot group.

Twenty-five musicians of British nationality and cultural background (mean age = 23.4 years; 10 males, 15 females; 21 right-handed, 4 left-handed) participated in the experiment. The participant mean age for starting a musical instrument was 6.7 years, while their mean duration of performing a musical instrument was 15.7 years. All participants were acquainted with Western Standard Notation. 28% were also acquainted with guitar tablatures, 20% with Jazz Chords and 12% had performed or composed music using graphic scores. One participant (4%) also knew a traditional notational system used to transcribe Irish folk melodies. Participants were recruited i) through a post at the Edinburgh University Students Association ii) with a circular e-mail calling for participants from the University of Edinburgh Music Department and iii) notes posted on notice boards around the University of Edinburgh Music Department.

3.1.1. Task and Procedure for Free-drawing investigation among British Participants

Participants heard up to sixty short stimuli that varied on three musical parameters (pitch, duration and attack rate as shown in Chapter 2), under instructions to

represent these visually so that if another musician saw the marks they should be able to connect them with the sounds. For the free-drawing investigation, in terms of directionality of script, all responses were identical with a horizontal left to right representation.

By examining participant responses, four trends emerged as to the methodology preferred to represent the stimuli:

i) Invented (analogue) notation: participants developed a consistent representational method to depict the auditory stimuli. (Figure 12).

ii) Invented (analogue) notation with elements of WSN: similar to i; however, participants also blend in elements from western standard notation such as note heads, dynamics and articulation. (Figure 13).

iii) Western Standard Notation: participants attempted to use WSN throughout the task, to the best of their ability. (Figure 14)

iv) Invented (analogue) pictorial notation: participants developed a representational method which was inconsistent – only structural elements remained unaltered, such as axial positioning of time versus variable parameter. (Figure 15).

None of the participants used written text to represent the stimuli. The main difference between the categories of invented notation (Fig.12) and invented pictorial notation (Fig.15) is one of replicability: In the first category (invented notation), subjects invented a representational system and then tended to apply it throughout the part investigating one variable parameter (i.e. pitch), or in some cases throughout the entire procedure, deploying a similar method for all variable parameters. In the fourth category (invented pictorial notation), the only participant who opted for this method did not restrain himself to one specific mode of representation – there was no consistency, as the method of depicting sound could be seen as a more inventive approach, with constant alterations. The only parameters kept were the representational axons: x for time and y for the dependent variable. Participants who chose WSN (12%) kept this mode of representation throughout the test. Examples of the four categories can be seen below:

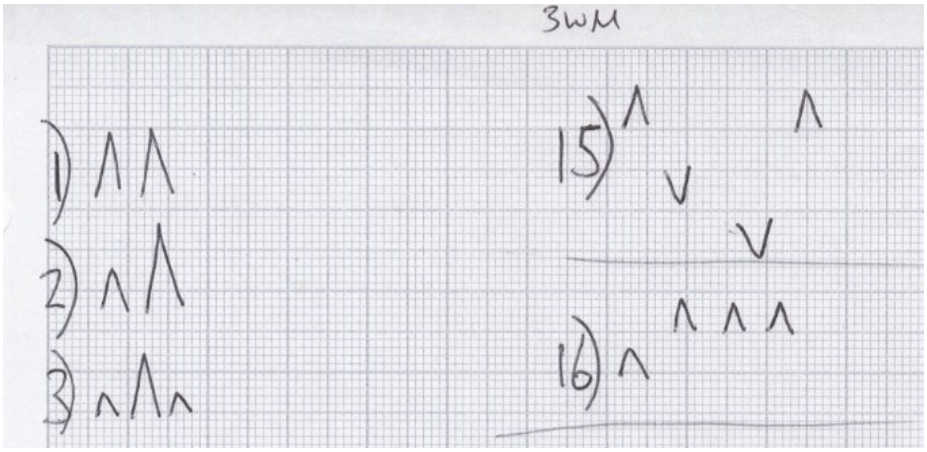


Figure 12: 'Invented' notation by British participant: time on x axis, dependable variant (pitch) on y axis, no elements of WSN

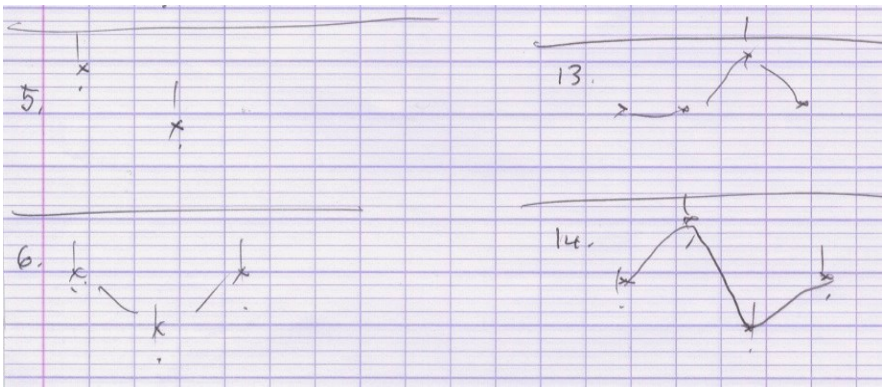


Figure 13: 'Invented' notation with elements from WSN (note heads, staccato markings).

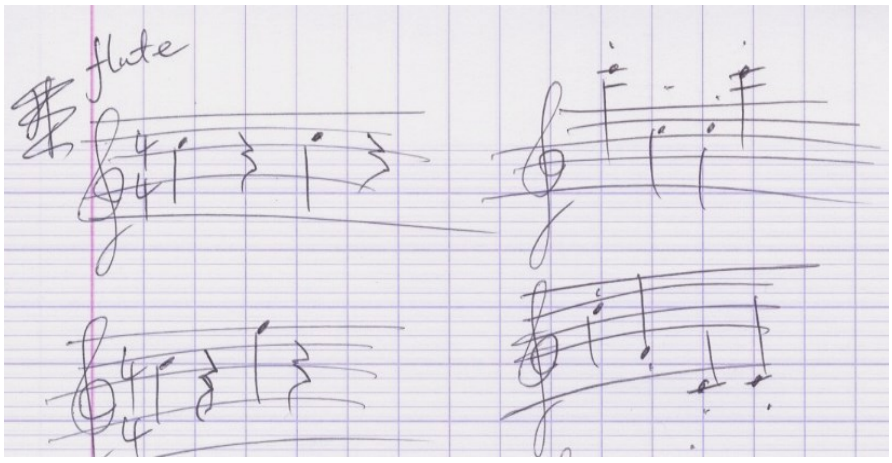


Figure 14: Western Standard Notation by British participant

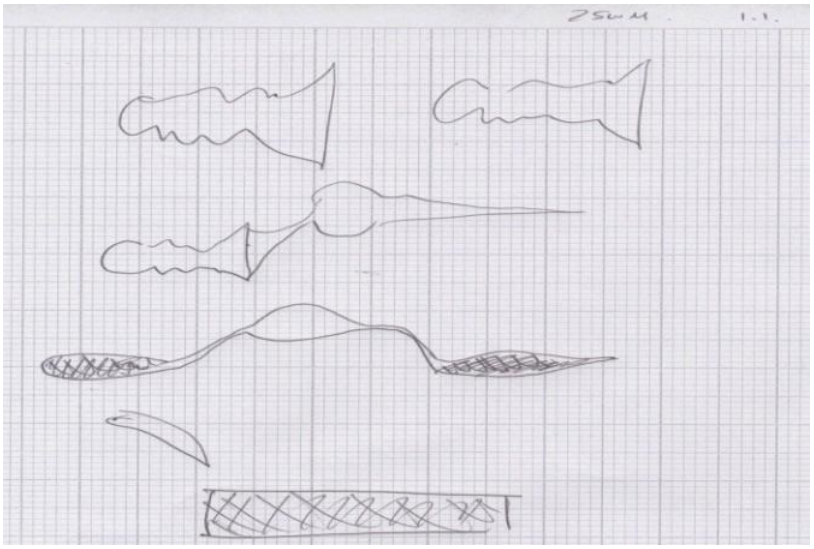


Figure 15: Invented 'pictorial' notation by British participant

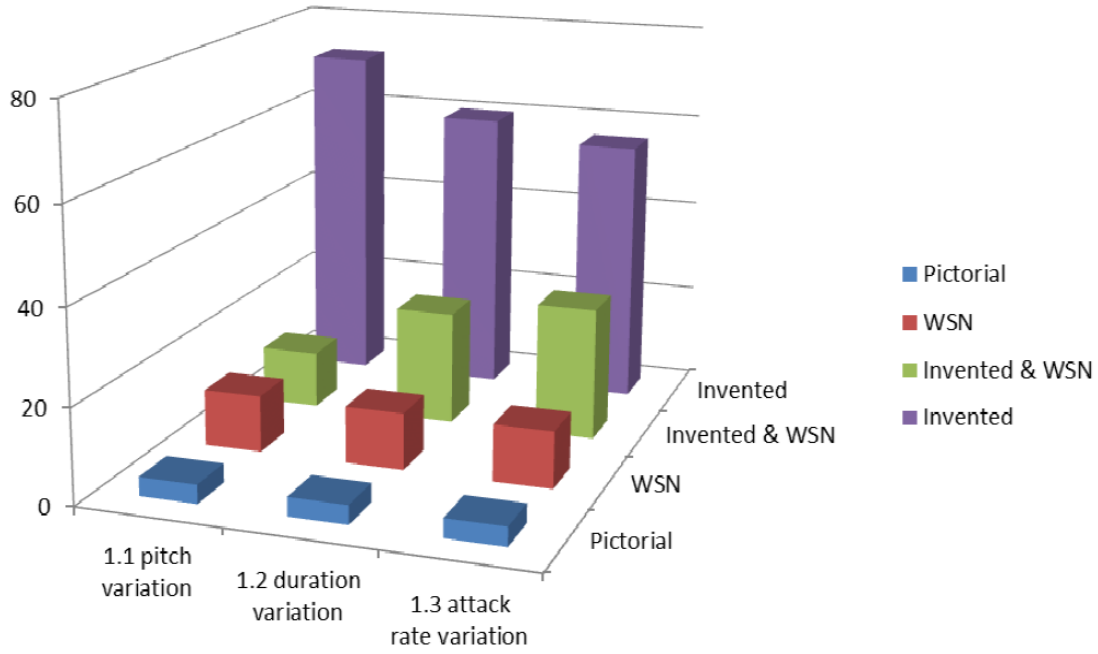
If participant responses of the free-drawing investigation (Part I) are separated as to their method of representation and by the variable parameter, then Table 15 below may be obtained:

Table 15: British participant preference table based on method of representation and variable parameter

PART	Invented Notation	Invented Notation & WSN	WSN	Pictorial notation
1.1. (var. pitch)	72% (18)	12% (3)	12% (3)	4% (1)
1.2. (var. duration)	60% (15)	24% (6)	12% (3)	4% (1)
1.3. (var. attack rate)	56% (14)	28% (7)	12% (3)	4% (1)

If the scores from the above Table are put into a three dimensional diagram, where the method of representation is represented on the x axis, percentage is represented on y axis and the variable parameter is represented on the z axis, the following graph may be obtained:

Graph 1: U.K. participant preference according to method of representation and variable parameter



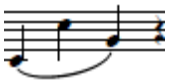
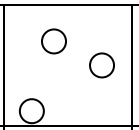
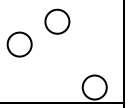
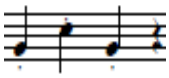
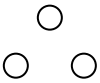
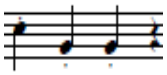
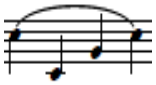
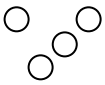
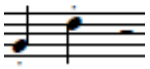
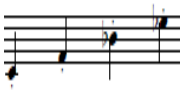
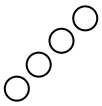
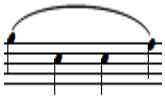
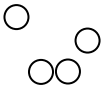
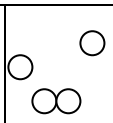
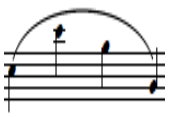
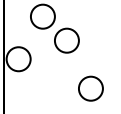
From the graph we see that the preferred method of representation among UK participants was invented (analogue) notation and invented notation with elements of WSN, with a unanimous left-to-right horizontal directionality. These two approaches to the representation of the stimuli account for 84% of all responses regardless of the variable parameter (pitch, duration or tempo). All responses were analogous in form for pitch and duration – none of the participants opted for an alphabetic or executive script. For attack rate it could be argued that performers created a mixture of analogue / executive forms of notation, as pitch was not specified and responses were kept at the same axial level on y axis. However, the symbolic nature of results and subsequent interviews indicated that this representation was indeed analogue and not executive.

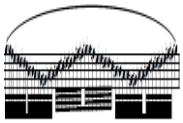
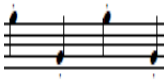
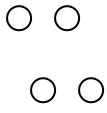
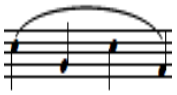
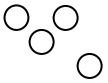
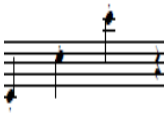
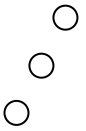
3.1.2. Forced-Choice Results for British Participants

As a reminder to the reader, the forced-choice design model required that participants select the best shape from a database to describe sound varying in pitch and attack

rate (24 trials). For the forced-choice design associating pre-selected shapes representing analogue pitch-time patterns, participant choices may be seen in Table 16 below, in order of preference. The number in the brackets stands for the number of participants who opted for a specific shape. The shapes omitted were not selected:

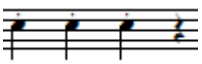
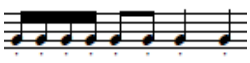
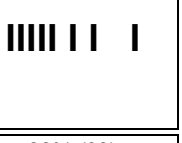
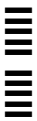
Table 16: participant choices with selected shapes for analogue pitch - time patterns by British participants

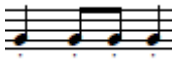
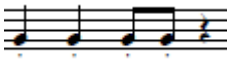
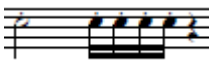
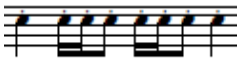
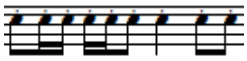
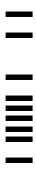
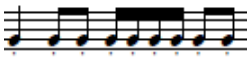
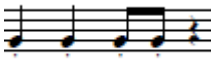
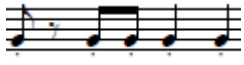
	WSN	Shape & participant preference			
A		 48% (12)	 36% (9)	 8% (2)	 8% (2)
B		 100% (25)			
C		 100% (25)			
D		 72% (18)	 20% (5)	 8% (2)	
E		 96% (24)	 4% (1)		
F		 88% (22)	 12% (3)		
G		 72% (18)	 20% (5)	 4% (1)	 4% (1)
H		 68% (17)	 24% (6)	 4% (1)	 4% (1)

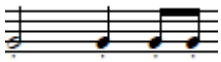
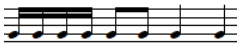
I		 48% (12)	 24% (6)	 20% (5)	 8% (2)
J		 92% (23)	 8% (2)		
K		 76% (19)	 24% (6)		
L		 100% (25)			

For the forced-choice design associating pre-selected shapes representing attack rate-time patterns also varying in directionality of script, responses are shown below in Table 17, where the participant preferences with selected shapes may be seen in order of preference:

Table 17: Selected attack rate visual stimuli for forced choice experiment by British participants

WSN (directive)	Shape & participant preference		
 A	 100% (25)		
 B	 88% (22)	 8% (2)	 4% (1)

C 				
	84% (21)	8% (2)	4% (1)	4% (1)
D 				
	72% (18)	24% (6)	4% (1)	
E 				
	80% (20)	12% (3)	4% (1)	4% (1)
F 				
	88% (22)	8% (2)	4% (1)	
G 				
	88% (22)	4% (1)	4% (1)	4% (1)
H 				
	92% (23)	4% (1)	4% (1)	
I 				
	100% (25)			
J 				
	56% (14)	36% (9)	4% (1)	4% (1)

 K					
	64% (16)	24% (6)	4% (1)	4% (1)	4% (1)
 L					
	96% (24)	4% (1)			

3.2. Japanese Participants

Forty-eight musicians took part in the experiment in Japan. These were students and professors from the Kyoto City University of the Arts and from Tokyo Geijutsu Daigaku, traditional Noh and Kabuki musicians from Kyoto, and traditional shamisen and sakuhachi players from Tokyo. The participants were separated into those who had high knowledge of WSN (23) and those who claimed to have little or no knowledge of WSN (25). Participants were located with the assistance of Prof. Takanori Fujita in Kyoto and the assistance of Yuri Kobayashi, Prof. Masayoshi Miura, and assistant Professor Aya Yoshikawa of the Tokyo National University of Fine Arts and Music (Tokyo Geijutsu Daigaku). As mentioned in the second chapter, the term 'Japanese traditional performers with minimal exposure to WSN' is used by convention, referring essentially to individuals who might best be described as functional 'monolinguals' regarding Japanese music notation with minimal or non-existent proficiency in WSN. I opted for participants who, although exposed to WSN, did not learn it, nor did they ever use it in performance.

Group B1 consisted of twenty-three participants with high knowledge of WSN (mean age = 27.9 years; 10 males, 13 females; 23 Right handed). The mean age for starting a musical instrument was 8.5 years, while the mean duration of performing a musical instrument was 22.6 years. All participants highly familiar with WSN and 91% knew a form of Japanese Traditional Notation (JTN). One participant (4.3%) was also familiar with tablatures, while another (4.3%) had performed or composed music using graphic scores.

3.2.1. Free-drawing investigation results for Japanese familiar with WSN

All responses in terms of directionality of script were in a left to right horizontal manner. Three categories emerged as preferred scripts by participants:

i) Invented (analogue) notation (Figure 16).

ii) Invented notation with elements of WSN, primarily through the use of note heads. (Figure 17).

iii) Invented pictorial notation (Figure 18).

Examples of the four categories can be seen below:

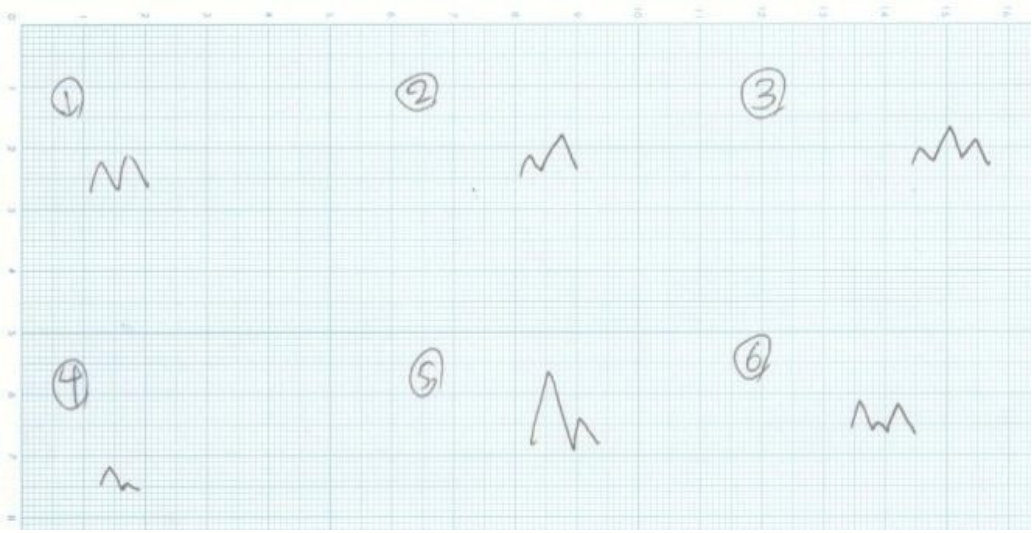


Figure 16: 'Invented' notation by Japanese participant familiar with WSN: time on x axis, dependable variant (pitch) on y axis, no elements of western notation. Note the similarities with Figure 12 from the British participants

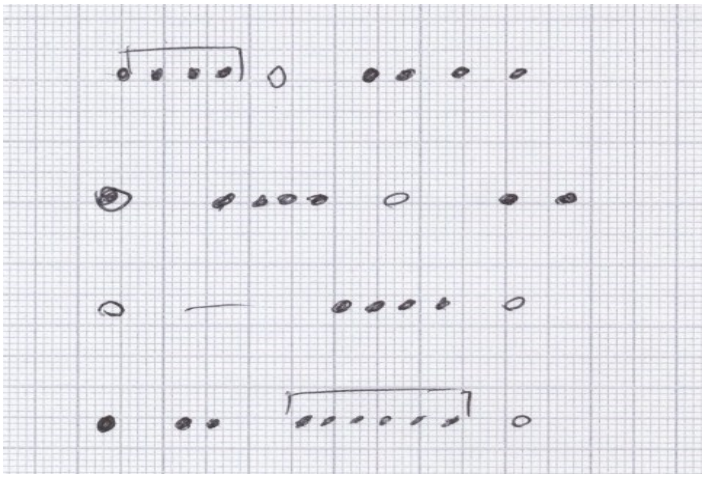


Figure 17: Invented Notation by Japanese participant with elements from Western Standard Notation

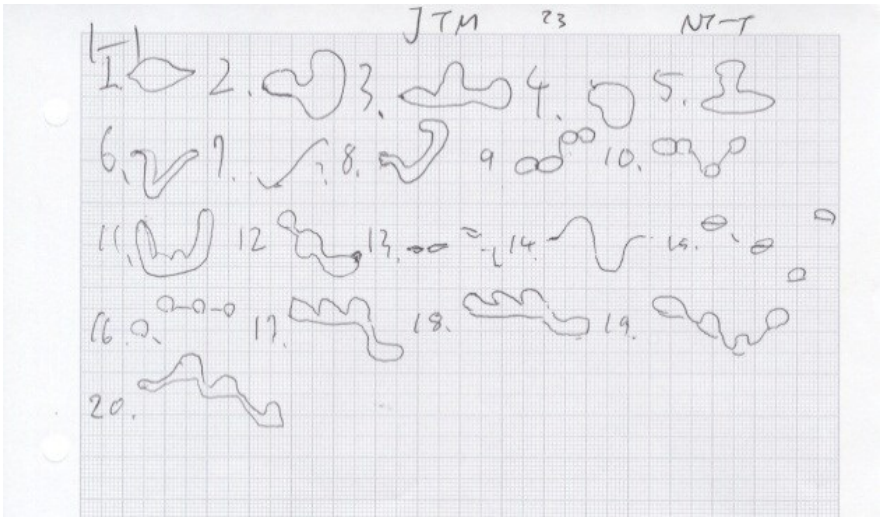


Figure 18: Invented 'pictorial' notation by Japanese participant

By separating participant responses of Part I as to their method of representation by variable parameter the following table (Table 18) has been obtained:

Table 18: First Japanese group (WSN) preferences according to method of representation and variable parameter

PART	Invented Notation	Invented Notation & WSN	Invented (pictorial) notation
1.1. (variable pitch)*	50% (10)	10% (2)	40% (8)
1.2. (variable duration)**	91% (20)	0%	9% (2)
1.3. (variable attack rate)**	86.5% (19)	4.5% (1)	9% (2)

* = three responses missing ** = two responses missing

It is noteworthy to mention that in terms of directionality of script all participants opted for a horizontal left-to-right representation regardless of the variable parameter, apart from one exception (participant MJK6T), who represented some of the duration stimuli in vertical manner, as in Figure 19 below:

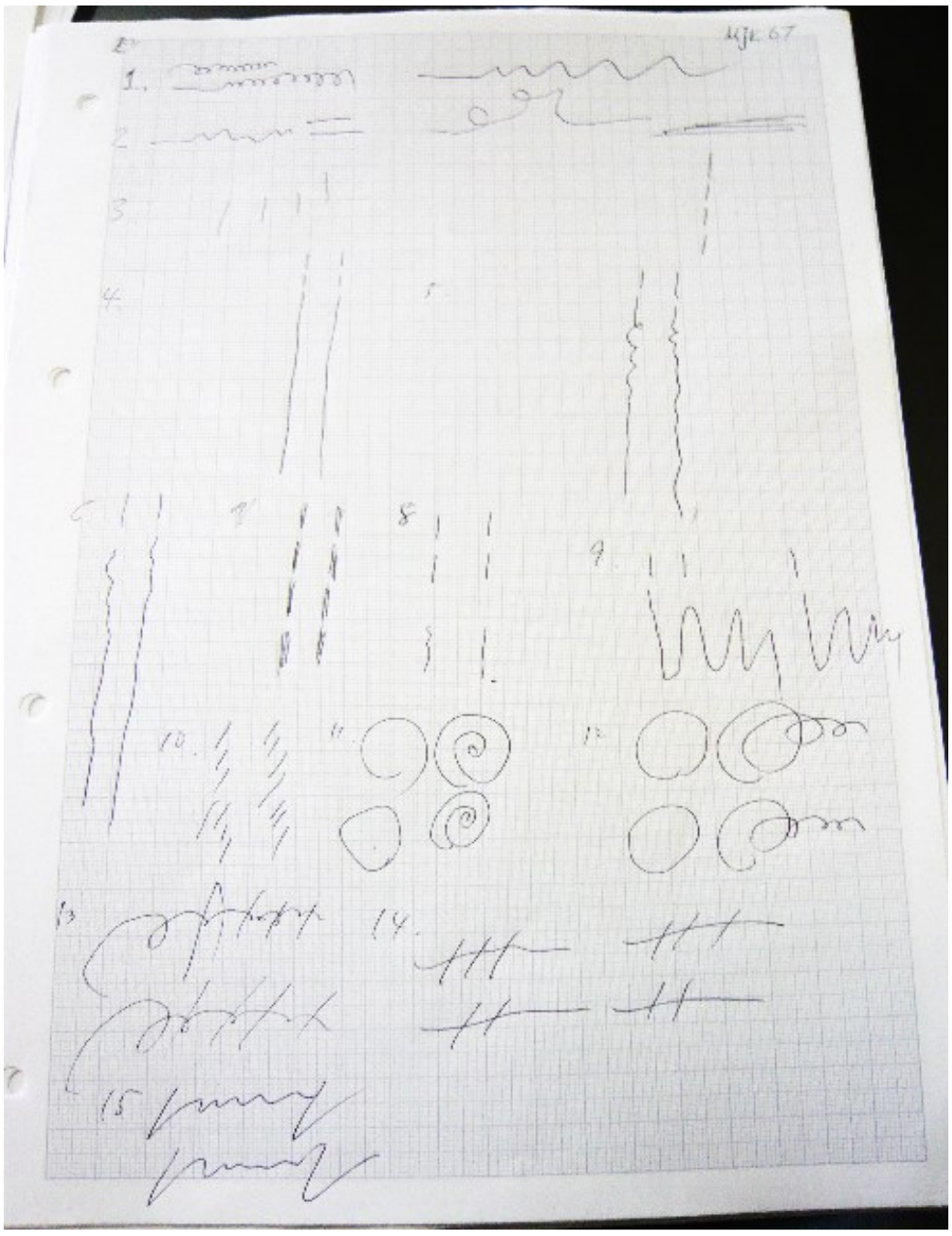
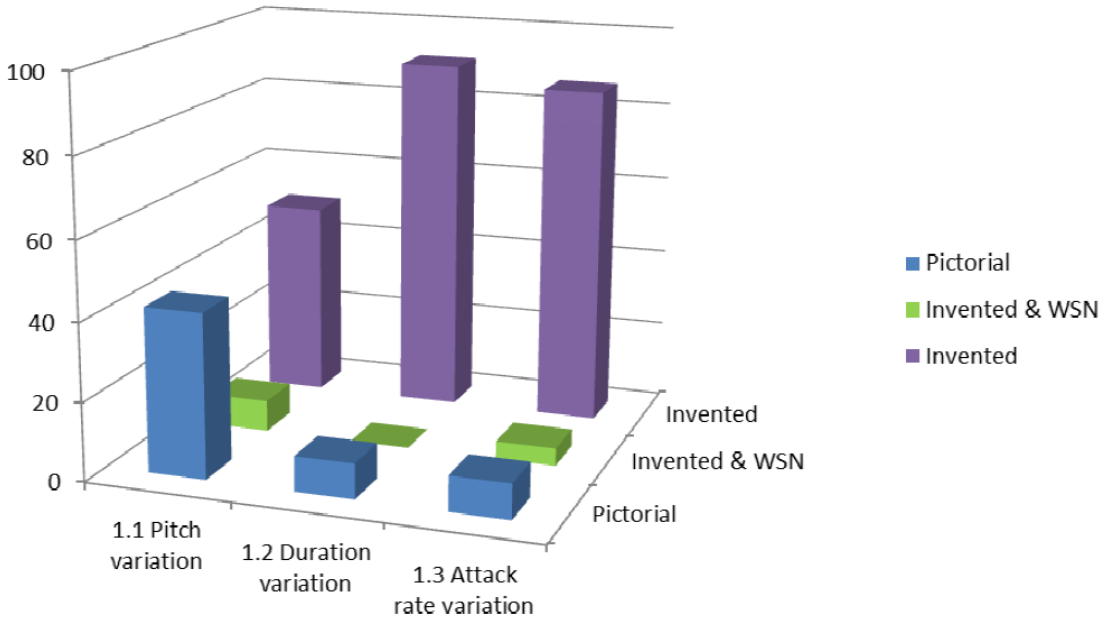


Figure 19: Japanese participant representing duration. Notice the vertical depiction of time for examples 4 to 8

If these scores are represented in similar fashion to participants originating from the United Kingdom (Graph 1), then Graph 2 of these results is obtained as seen below. The method of representation is represented on the x axis, the percentage is represented on y axis and the variable parameter is represented on the z axis.

Graph 2: Japanese participant preference (familiar with WSN) according to method of representation and variable parameter

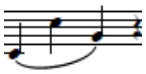
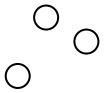
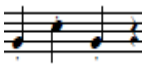
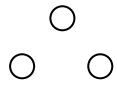
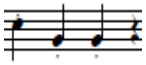
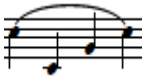
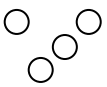
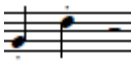
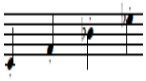
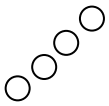
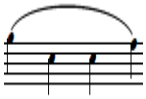
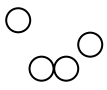
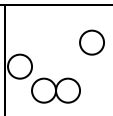
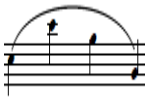
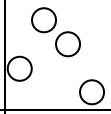
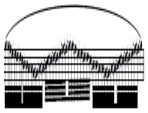


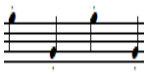
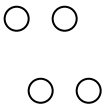
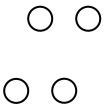
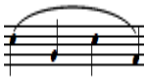
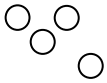
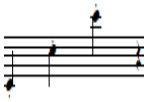
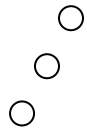
A noticeable difference occurring from Graph 1 (U.K. participants) and Graph 2 (Japanese participants familiar with WSN) is the rise of the pictorial method of representation, though idiosyncratic in nature, and also the lack of any symbolic element from Japanese Traditional Notation apart from participant MTJ6K, who represented time vertically. The majority of this group were familiar with at least one traditional Japanese system of music notation. All participants opted for analogue representations of pitch and duration, while tempo was similarly represented in an analogue/executive form.

3.2.2. Forced-choice results for Japanese participants familiar with WSN

In Table 19 below we can see participant choices with selected shapes for the forced-choice design, in order of preference. One participant did not take part in the forced-choice investigation, bringing the number of participants to twenty-two for this section. The shapes omitted were not selected:

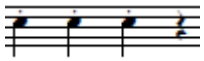
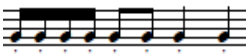
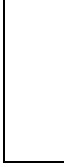
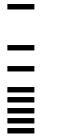
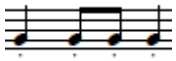
Table 19: percentage scores with selected shapes for analogue pitch - time patterns by Japanese participants familiar with WSN

	Mnemonic	Shape & participant preference				
A		 58.5% (13)	 18% (4)	 13.5% (3)	III 9% (2)	
B		 82% (18)	 18% (4)			
C		 95.5% (21)	 4.5% (1)			
D		 72% (16)	 13.5% (3)	 9% (2)	 4.5% (1)	
E		 85.5% (19)	 4.5% (1)	 4.5% (1)	 4.5% (1)	
F		 81% (18)	 9% (2)	 9% (2)		
G		 54% (12)	 18% (4)	 18% (4)	 4.5% (1)	 4.5% (1)
H		 63% (14)	 31.5% (7)	 4.5% (1)		
I		 36% (8)	 27% (6)	 18% (4)	 18% (4)	

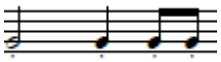
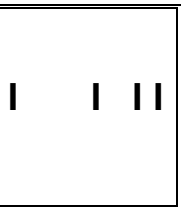
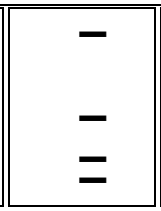
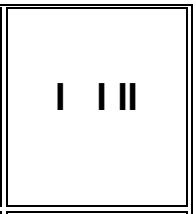
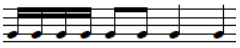
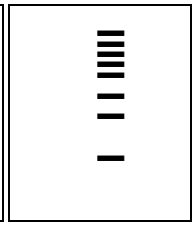
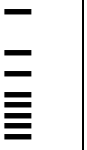
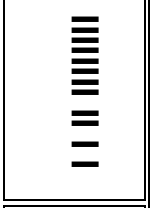
J				
		85.5% (19)	9% (2)	4.5% (1)
K				
		72% (16)	22.5% (5)	4.5% (1)
L				
		85.5% (19)	9% (2)	4.5% (1)

In Table 20 below the preferences with selected shapes for the forced-choice representation of attack rate may be seen, in order of preference:

Table 20: Selected attack rate visual stimuli for forced choice experiment by Japanese participants familiar with WSN

WSN (directive)	Shape & participant preference			
 A				
	63% (14)	22.5% (5)	9% (2)	4.5% (1)
 B				
	76.5% (17)	18.% (4)	4.5% (1)	
 C				
	76.5% (17)	9% (2)	9% (2)	4.5% (1)

D					
	67.5% (15)	18% (4)	9% (2)	4.5% (1)	
E					
	72% (16)	9% (2)	9% (2)	4.5% (1)	4.5% (1)
F					
	76.5% (17)	22.5% (5)			
G					
	85.5% (19)	9% (2)	4.5% (1)		
H					
	67.5% (15)	18% (4)	9% (2)	4.5% (1)	
I					
	72% (16)	22.5% (5)	4.5% (1)		
J					
	63% (14)	22.5% (5)	13.5% (3)		

 K				
	76.5% (17)	18% (4)	4.5% (1)	
 L				
	63% (14)	13.5% (3)	13.5% (3)	9% (2)

In relation to Tables 16 and 17 (U.K. participants) it is apparent that the range of responses has increased. Vertical directionality of script is noticeable especially in Table 20 (forced choice representation of attack rate versus time). While at Table 17 (U.K. participants), vertical representations of time range between 4% and 8% (1-2 participants), at Table 20 (Japanese participants) the range for individual responses is between 9% and 36% (2-8 participants). For tables 16 and 19 (forced-choice representation of pitch versus time), the Japanese group do not always opt for clear analogue notations separating legato from staccato techniques, unlike their U.K counterparts. This could suggest that since both groups are familiar with WSN the difference in their responses in both parts of the experimental procedure might stem possibly from cultural differences, even if both articulation techniques are common in both western and Japanese traditional music.

It is also noticeable that although participants from this group were familiar with JTN at over 90%, only one of the participants represented time vertically, as is common with JTN systems. Let us see though how the group of Japanese musicians unfamiliar with WSN responded.

3.3. Japanese Group unfamiliar with WSN

Group B2 consisted of twenty-five participants with minimal or no knowledge of WSN (mean age = 47.2; 11 males, 14 females; 24 right handed, 1 left handed). The mean age for starting a musical instrument was 18.6 years, while the mean duration of performing a musical instrument was 32.6 years. All participants were acquainted with a form of JTN, while 28% claimed to be in a position to recognize WSN as a form of notation when they saw it but were unable to use it, and one participant (4%) was aware of the existence of Graphic Scores, though he had never used it in performance.

3.3.1. Free-drawing investigation results for Japanese unfamiliar with WSN

Four categories emerged by the participants' responses:

i) Invented (analogue) notation
ii) Invented notation with JTN elements (vertical depiction of time on the y axis – see Figure 20).
iii) Invented pictorial notation.
iv) Abstract pictorial (Figure 21).

Examples of i) invented notation and iii) invented pictorial notation, have been given above. Responses representing time vertically were classified as invented notation with JTN elements. This should not be associated with participant MJT6K, as he displayed such results for only part of his responses for only one of the variable parameters of the free-drawing investigation, which in comparison with the rest of his responses and his subsequent interview revealed an approach to the task that would be classified as invented pictorial notation. A new category also emerged (abstract pictorial) as seen on Figure 21. Participants belonging to this group provided responses which do not fall in the time-variable parameter category of analogue notational systems. The main difference between the categories of invented

pictorial notation (3) and abstract pictorial (4) is lack of any pattern for the latter: In the third category (invented pictorial notation), participants were not consistent in their method of representation, however they maintained the time - variable parameter characteristic. The abstract pictorial method does not represent information in time.

However, in similar fashion to the previous two groups (British and Japanese familiar with WSN), participants kept the same parameters at the representational axons: x for time and y for the dependent variable. In the fourth category responses were of an abstract pictorial nature.. There were no detectable parameters depicted that might relate images with their representative sound stimuli in analogue manner, or if they existed, they were not consistent to the point that a pattern would become apparent to the eyes of a western observer, or emerge from the subsequent interviews.

An example of the 2nd category (invented notation with elements from JTN) can be seen below on Figure 20:

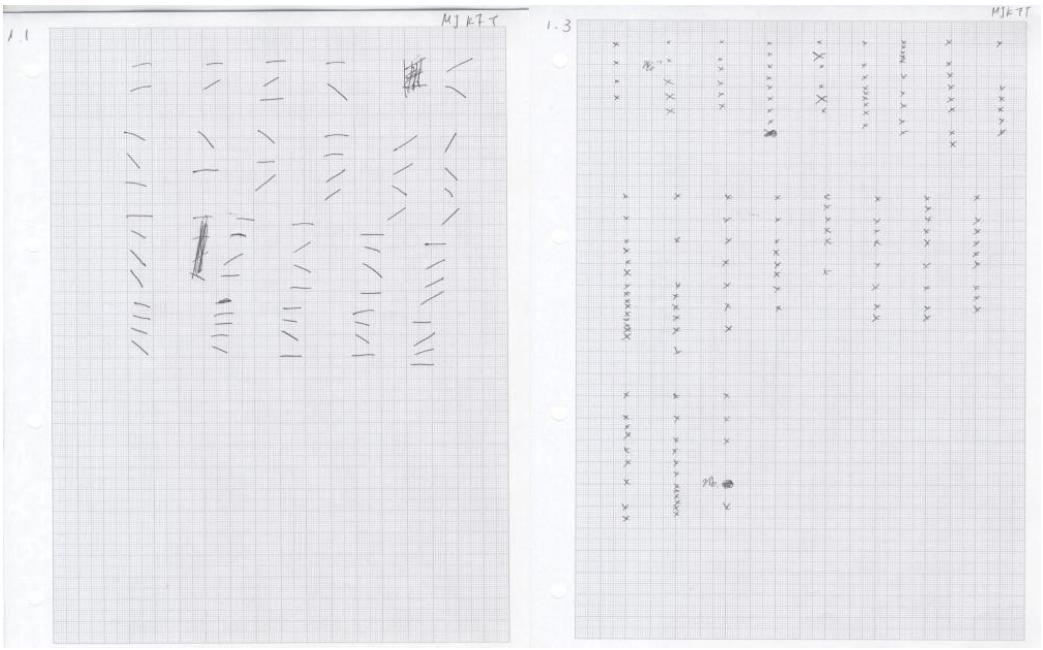


Figure 20: invented notation with JTN elements by Japanese participant unfamiliar with WSN

The abstract-pictorial one, as seen in Figure 21 below:

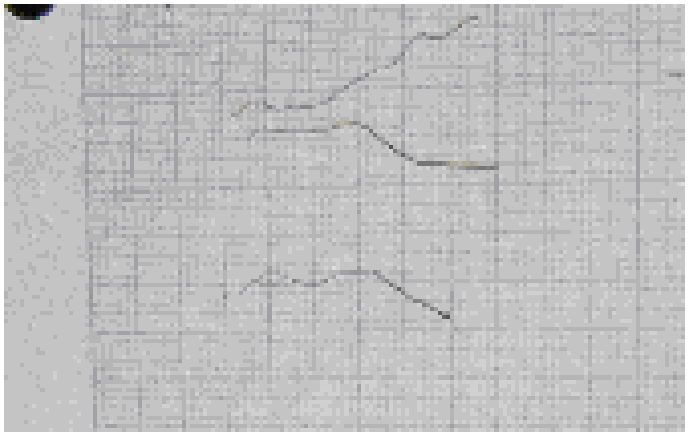


Figure 21: Abstract-pictorial notation from Japanese participants

This is a participant's response for the entire free-drawing response of the investigation, with duration as the variable parameter. According to the participant at the follow-up interview, all of the twenty flute sounds were represented by the three lines drawn above (the first two were drawn for the first stimulus varying in pitch). The participant claimed that the variations among the pitch stimuli were observable, but not significant enough so as to justify a different visual representation than the ones already provided. Ten participants (codes JTF24T to JTM33T) did not complete the free drawing part for attack rate, as well as the forced-choice investigation of attack rate due to the fact that they were hard of hearing and I did not have supplementary equipment with me in order to amplify the volume - due to time pressure and difficulty in translating directions, as participants were mostly over sixty-five years old. Other options could not be realised either. From this sub-group of ten participants, one seemed to be completely unresponsive to the free representation of duration and attack rate investigation.

When Part I is separated into categories according to the variable parameter tested, then the following results are obtained:

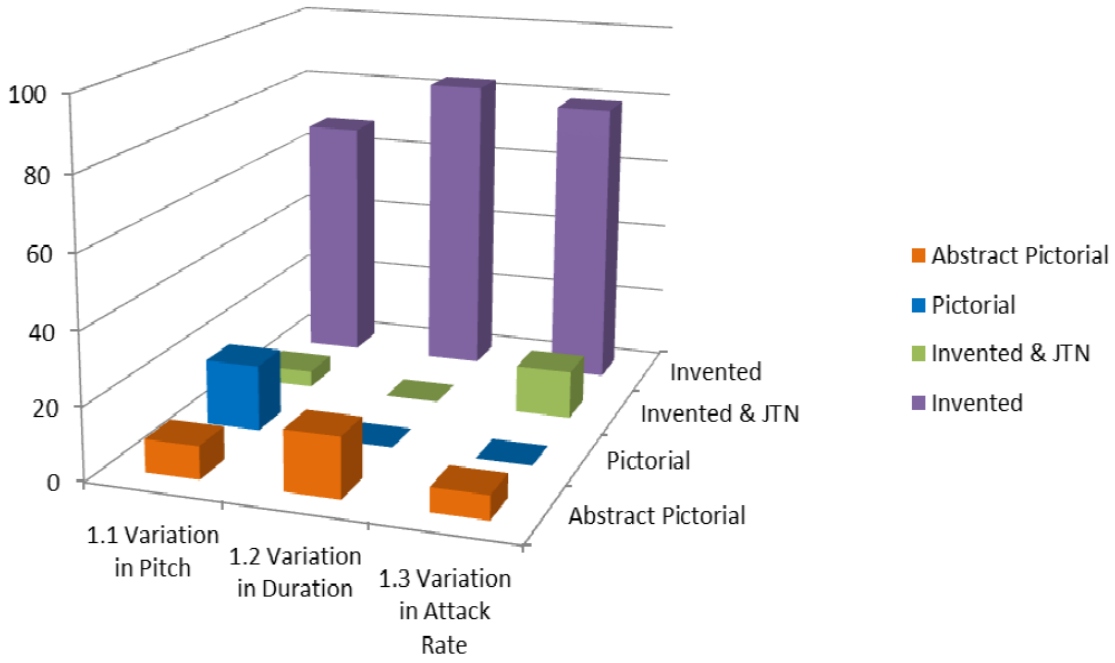
Table 21: Second Japanese group (unfamiliar with WSN) - preferences according to method of representation and variable parameter

PART	Invented notation	Invented notation & JTN	Invented (pictorial) notation	Abstract (pictorial) notation
1.1. (variable pitch)	72% (18)	4% (1)	16% (4)	8% (2)
1.2. (variable duration)*	83.3% (20)	0%	0%	16.6% (4)
1.3. (variable attack rate)**	79.2% (12)	13.2% (2)	0%	6.6% (1)

* = one response missing ** = 10 responses missing

If these scores are represented as in Graphs 1 and 2, then Graph 3 of these results can be obtained as seen below. The method of representation is shown on the x axis, percentage is represented on y axis and the variable parameter is represented on the z axis.

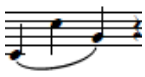
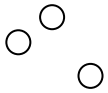
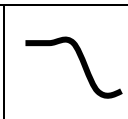
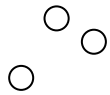
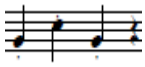
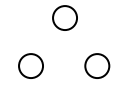
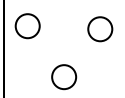
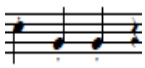
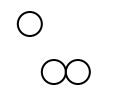
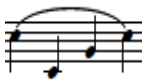
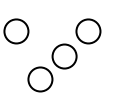
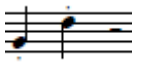
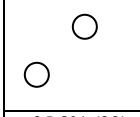
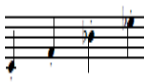
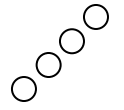
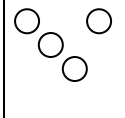
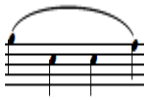
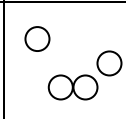
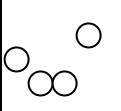
Graph 3: Japanese participant preference (unfamiliar with WSN) according to method of representation and variable parameter

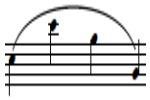
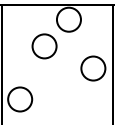
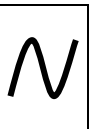
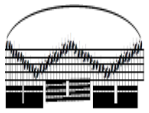
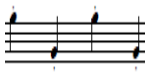
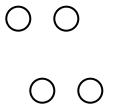
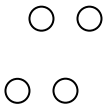
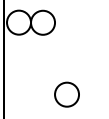
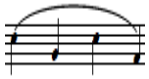
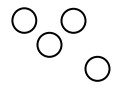
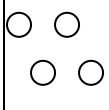
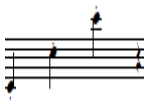
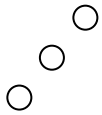


3.3.2. Forced-choice results for Japanese participants unfamiliar with WSN

In Table 22 below we can see the selected shapes with their respective scores for the forced choice part of the experiment which dealt with pitch, in order of preference:

Table 22: Results for Part 2.1 for Japanese Participants unfamiliar with WSN

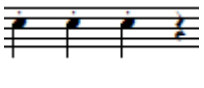
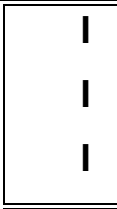
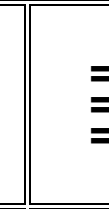
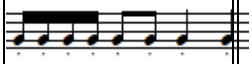
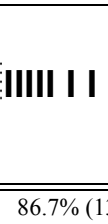
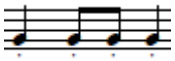
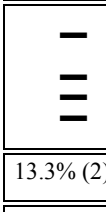
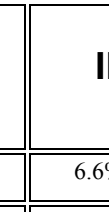
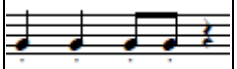
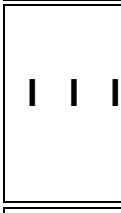
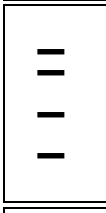
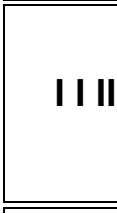
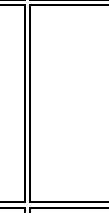
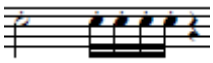
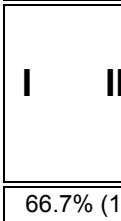
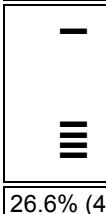
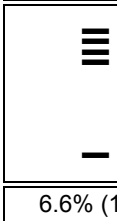
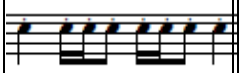
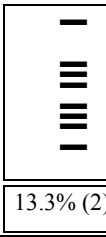
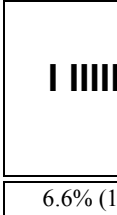
	WSN	Shape & participant preference					
A							
		29.4% (7)	25.2% (6)	21% (5)	12.6% (3)	8.4% (2)	4.2% (1)
B							
		67.2% (16)	12.6% (3)	8.4% (2)	4.2% (1)		
C							
		79% (19)	4.2% (1)	4.2% (1)	4.2% (1)	4.2% (1)	4.2% (1)
D							
		54.6% (13)	16.8% (4)	12.6% (3)	12.6% (3)	8.4% (1)	
E							
		95.8% (23)	4.2% (1)				
F							
		71.4%	12.6% (3)	8.4% (2)	8.4% (2)		
G							
		37.8% (9)	25.2% (6)	16.8% (4)	8.4% (2)	8.4% (2)	4.2% (1)

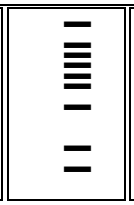
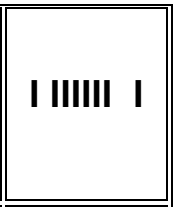
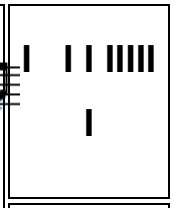
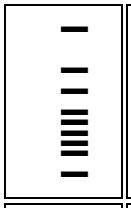
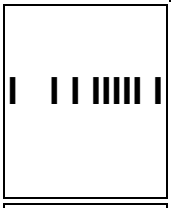
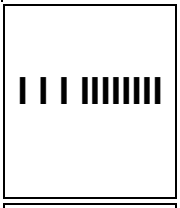
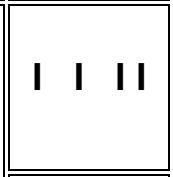
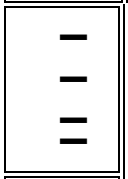
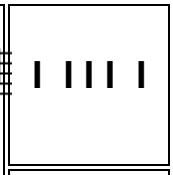
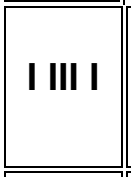
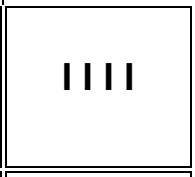
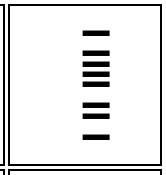
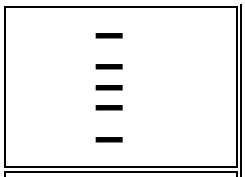
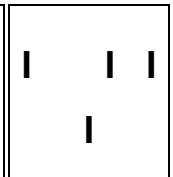
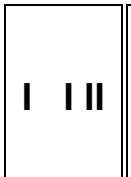
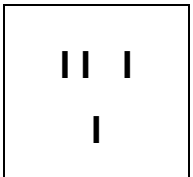
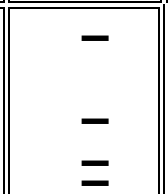
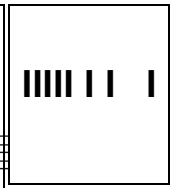
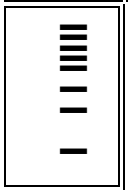
H								
		46.2% (11)	16.8% (4)	12.6% (3)	12.6% (3)	4.2% (1)	4.2% (1)	4.2%(1)
I								
		37.8% (9)	25.2% (6)	21% (5)	16.8% (4)			
J								
		66.2% (16)	16.8% (4)	8.4% (2)	4.2% (1)	4.2% (1)		
K								
		54.6% (13)	16.8% (4)	16.8% (4)	4.2% (1)	4.2% (1)	4.2% (1)	
L								
		63% (15)	16.8% (4)	8.4% (2)	8.4% (2)	4.2% (1)		

It is observable that the range of the responses has further increased in comparison with the first Japanese group and the pilot group from the United Kingdom.

In Table 23 below the participant preferences with selected shapes for the forced-choice representation of attack rate may be seen, in order of preference. As mentioned before the data of only 15 participants are presented here:

Table 23: Selected attack rate visual stimuli for forced-choice investigation by Japanese participants unfamiliar with WSN

WSN	Shape & participant preference			
 A				
	73.4% (11)	13.3% (2)	6.6% (1)	6.6% (1)
 B				
	86.7% (13)	13.3% (2)		
 C				
	73.4% (11)	13.3% (2)	6.6% (1)	6.6% (1)
 D				
	73.4% (11)	13.3% (2)	6.6% (1)	6.6% (1)
 E				
	66.7% (10)	26.6% (4)	6.6% (1)	
 F				
	80% (12)	13.3% (2)	6.6% (1)	

G					
	73.37% (11)	20.1% (3)	6.6% (1)		
H					
	60% (9)	26.6% (4)	6.6% (1)	6.6% (1)	
I					
	73.4% (11)	26.6% (4)			
J					
	60.3% (9)	13.3% (2)	13.3% (2)	6.6% (1)	6.6% (1)
K					
	53.4% (8)	20% (3)	13.3% (2)	13.3% (2)	
L					
	60% (9)	40% (6)			

In relation to Tables 16, 17 (U.K. participants), and Tables 19 and 20 (Japanese participants familiar with WSN) the range of responses has further increased. While at Table 17 (U.K. participants) vertical representations of time are ranged between 4% and 8% and for Japanese participants familiar with WSN are between 9% and 36%, for this group vertical representations of time vary between 13.3% and 40% (2-

9 participants). This suggests that familiarity with WSN affected the forced-choice experiment marginally. However, the results from the Part I (free representation of pitch / duration / tempo versus time) indicate somehow larger differences in representational modes originating from the participants.

We have seen that the majority of Japanese participants (both groups) represented information using x as the time axis. This could mean that: i) participants assume a western approach to the task ii) the representation of time in a free-drawing musical paradigm is not influenced by existing modes of musical representation. It should be noticed, however, that those Japanese participants who were Masters of traditional Japanese music or students at traditional Noh schools selected vertical (in relation to time) responses for the forced-choice designs at a higher percentage than their own representations for the free-drawing investigation of the first part.

I should mention that on the one occasion, that one student of traditional music who was in the presence of her teacher while taking the test, seemed to deliberately delay her provided responses so as to see the method that her teacher used for the free-choice representation. When I commented on that, the student stopped. Later, the student tried to 'correct' her responses for the forced-choice part, when she saw that they differed from those of her teacher, although I made it clear that all responses were acceptable. Therefore, her data were not taken into consideration, and it was rather fortunate that this happened quite early during my interviews in Kyoto. Consequently, for all later interviews in Kyoto and Tokyo, I avoided conducting interviews with students while their teachers were present, as I feared that responses may not represent their own beliefs but rather those of their masters. The reason for this behaviour may be understood better in Chapter Four, when the teacher-student relationship is better examined.

3.4. Papua New Guinean Participants (Port Moresby / National Capital District).

Group C1: Twenty-seven musicians (mean age = 19.8 years; 23 males, 4 females; 27 right handed - 0 left handed) participated in the investigation, with a background origin of the Highlands regions of Papua New Guinea who were living in Port Moresby. The participant mean age for starting a musical instrument (from provided responses) was 12.2 years, while the mean age of performing a musical instrument was 8.5 years. However it should be noted that participants provided responses for 'western' music and musical instruments. The majority (93%) had taken part in sing-sings (song and dance festivals, where singing and dancing is combined) since they were very young children. All participants were acquainted with WSN; participants who played the guitar were also aware of British letter notation of the Latin alphabet (where A is La) as well as major/minor chords, but not to a level to make them able to read Jazz Chords (for example C13 #11). Participant recruitment largely took place through a community Art Education Programme held in Port Moresby, and through the University of Papua New Guinea Music Department.

It has to be noted that Papua New Guinea is a culturally diverse place. It would be practically impossible to locate participants of the same tribe who were familiar with western music and WSN to a level that would enable them to participate in the experimental procedure. Thus participants in Port Moresby were selected on the basis of their original geographical background and language group (Eastern Highlands, Chimbu, Western Highlands, Southern Highlands and Enga provinces), ideally speaking a Trans-New Guinea language. The situations will be further analysed in Chapter Four.

3.4.1. Free-drawing investigation results for Papua New Guinean Highlanders familiar with WSN

Participants followed similar method procedures with the pilot group and the two Japanese groups for both parts of the investigation (free-drawing and forced-choice investigation).

For the free-drawing investigation, responses in terms of directionality of script were horizontal left to right (>80%). None of the responses had a vertical directionality; rather, exceptions consisted of responses which, being of abstract-pictorial nature, did not indicate time (i.e. participants PNGMNT4 and PNGMNT8). Four categories emerged regarding the preferred scripts by participants:

i) Invented (analogue) notation, where participants developed a consistent representational method to depict the auditory stimuli (Figure 22)
ii) Invented notation with elements from WSN: similar as i, with participants blending elements from western standard notation such as note heads, dynamics and articulation (Figure 23)
iii) Invented pictorial notation, where participants developed a representational method which alters constantly – only structural elements remain unaltered, such as axial positioning of time versus the variable parameter (Figure 24)
iv) Abstract pictorial. Participants did not provide answers related to the sound stimuli in a consistent manner. Responses seemed arbitrary (Figure 25)
v) Western Standard Notation.

In the fourth category, responses again seem arbitrary. However, there are differences between the abstract-pictorial images provided by the Japanese participants and both groups of Papua New Guinean participants, mainly with regard to the visual size of responses (far larger in Papua New Guinea), and the location within the graph paper.

A defining element as to what might lead a Papuan literate performer to depict sounds with an 'invented' notational system or a pictorial one has been observed for the free-drawing paradigm with pitch as the variable parameter: Participants familiar with WSN who make use of it in performance (most university students and a minority of performers in western-style 'power' bands) showed a preference for depicting visual stimuli with invented notation instead of pictorial. However, no such trend was noticeable for the high number of pictorial responses among Japanese participants familiar with WSN.

Only one participant chose WSN throughout the free-drawing paradigm with attack rate as the variable parameter, thus making WSN's appearance a statistical minority. The participant (PNGMNT5) did not keep WSN as a mode of representation throughout the test. Invented notation with WSN was also not highly preferred. Examples of the four most popular categories (i, ii, iii, iv) in terms of responses may be seen below:

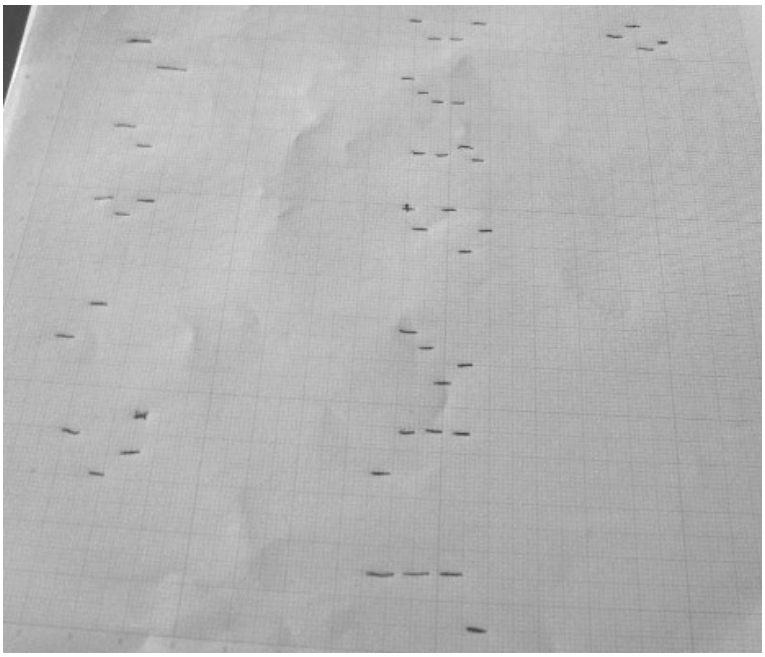


Figure 22: 'Invented' notation: time on x axis, dependable variant (pitch) on y axis, no elements of WSN

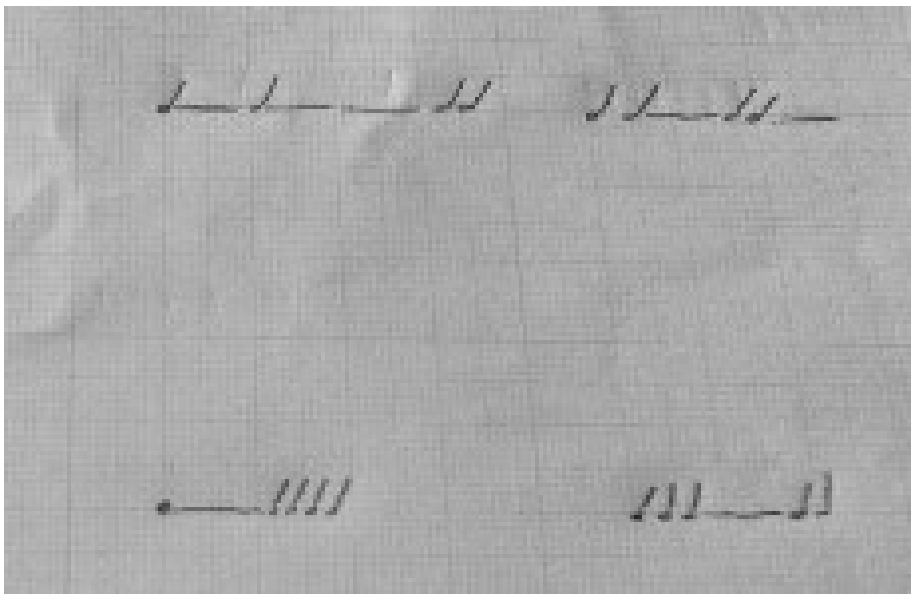


Figure 23: 'Invented' notation with elements of WSN: time on x axis, dependable variant (pitch) on y axis, with note-heads

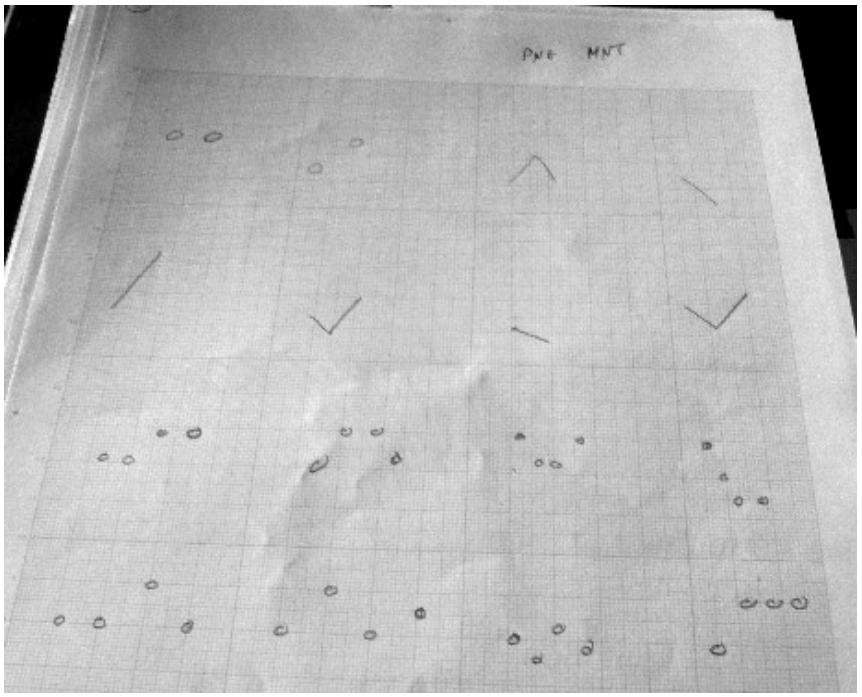


Figure 24: 'Pictorial' notation: time on x axis, dependable variant (pitch) on y axis without consistent representational pattern

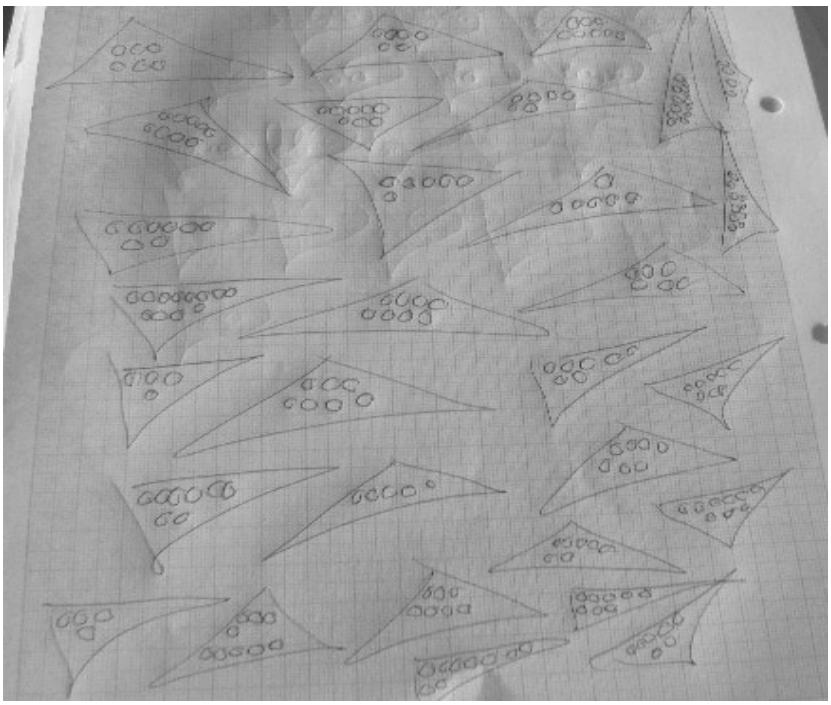


Figure 25: Abstract-Pictorial notation for pitch as a variable parameter by P.N.G. literate participant

The following table (Table 24) shows representation results for the variable parameters for all parts of the free-drawing part of the investigation.

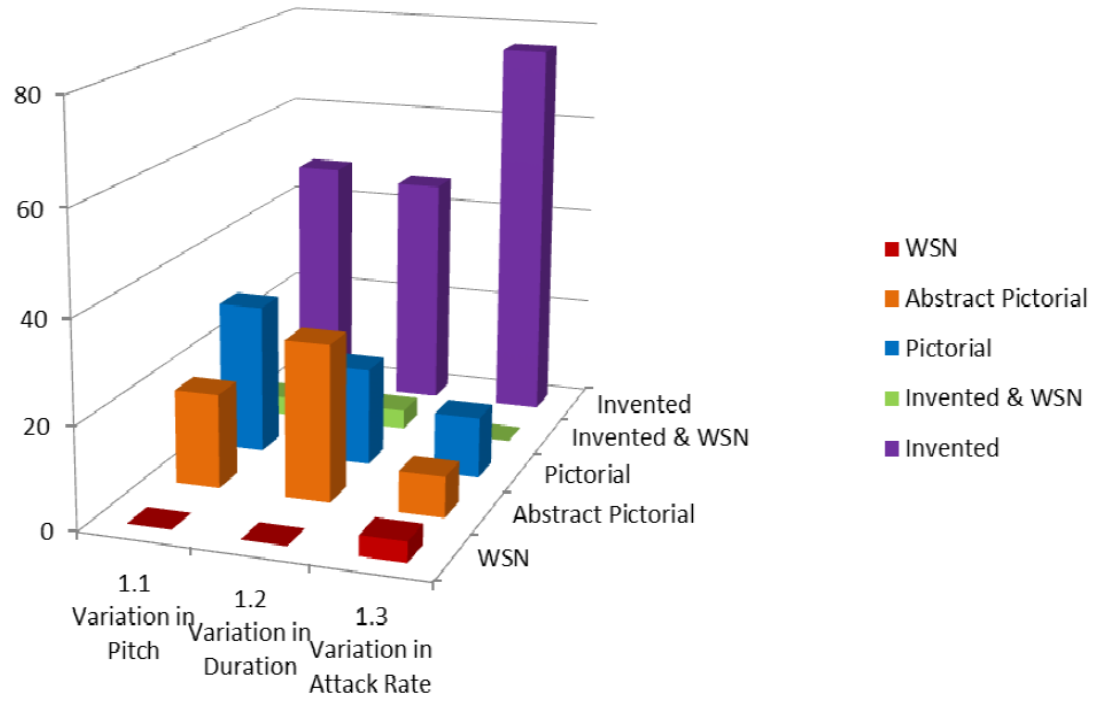
Table 24: First Papua New Guinean group (literate / familiar with WSN) representation results for free-drawing investigation. Preferences are according to method of representation and variable parameter

PART	Invented Notation	Invented Notation & WSN	Invented (pictorial) notation	Abstract-pictorial	WSN
1.1. (variable pitch)	48.1% (13)	3.7% (1)	29.6% (8)	18.5% (5)	0%
1.2. (variable duration)*	45.6% (12)	3.8% (1)	19% (5)	30.4% (8)	0%
1.3. (variable attack rate)**	76% (19)	0%	12% (3)	8% (2)	4% (1)

* = one response missing **= two responses missing

If the above results are demonstrated into a graph, we get Graph 4 as seen below:

Graph 4: PNG literate participant preference (familiar with WSN)

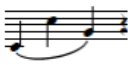
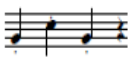
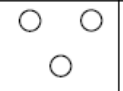
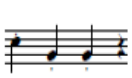
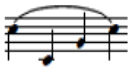
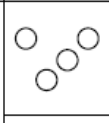
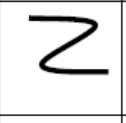
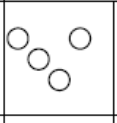
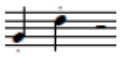
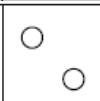
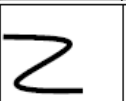
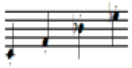
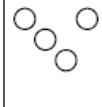
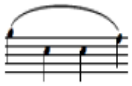
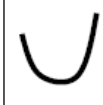
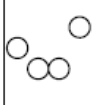
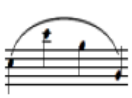
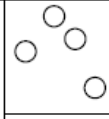
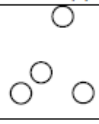
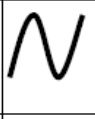
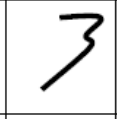
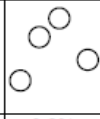


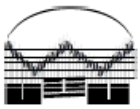
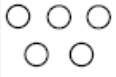
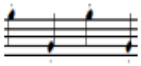
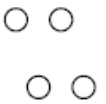
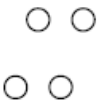
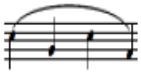
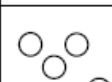
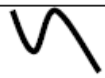
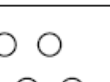
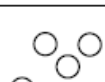
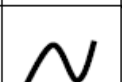
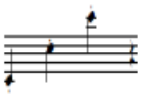
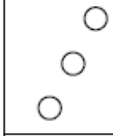
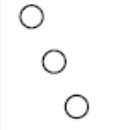
Invented notation representing time on the horizontal parameter with a left-to-right direction remains the favoured method, with variable parameters depicted on the vertical axis. In relation to the pilot group and the two Japanese groups (familiar / unfamiliar with WSN) it is noticeable that pictorial and abstract-pictorial responses are significantly high, while western standard notation as a method of representation is not preferred by participants despite their apparent familiarity with it. It could be argued that although participants may be familiar with WSN, they do not make excessive use of it as a method of representation or deploy it with the frequency seen in western cultures as mentioned before. String bands (and the majority of 'western' instruments in Papua New Guinea) usually rely on verbal communication, while melodies are more often than not taught orally with a tutor's assistance.

3.4.2. Forced-choice results for Papua New Guinean participants familiar with WSN

A forced-choice design model required that participants select the best shape from a database created by myself to describe sound varying in pitch and attack rate (24 trials). For the forced-choice design of pre-selected shapes representing pitch-time patterns responses are shown in the following table (Table 25), in order of preference. One participant did not complete the forced-choice investigation:

Table 25: Forced choice selection of pitch by literate Papua New Guineans

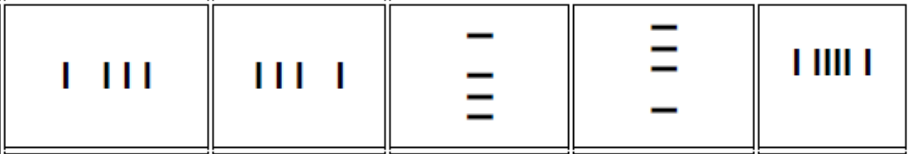
	WSN	Shape & participant preference							
A		 30.4% (8)	 26.6% (7)	 19% (5)	 15.2% (4)	 3.8% (1)	 3.8% (1)		
B		 72.2% (19)	 15.2% (4)	 11.4% (3)					
C		 64.6% (17)	 15.2% (4)	 7.6% (2)	 7.6% (2)	 3.8% (1)			
D		 41.8% (11)	 15.2% (3)	 15.2% (3)	 11.4% (3)	 7.6% (2)	 7.6% (2)	 3.8% (1)	 3.8% (1)
E		 72.2% (19)	 11.4% (3)	 7.6% (2)	 3.8% (1)	 3.8% (1)			
F		 79.8% (21)	 7.6% (2)	 7.6% (2)	 3.8% (1)				
G		 41.8% (11)	 19% (5)	 15.2% (4)	 11.4% (3)	 7.6% (2)	 3.8% (1)		
H		 26.6% (7)	 22.8% (6)	 19% (5)	 11.4% (3)	 7.6% (2)	 3.8% (1)	 3.8% (1)	 3.8% (1)

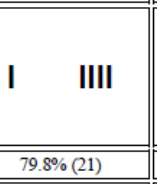
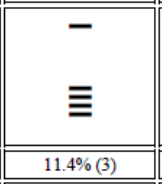
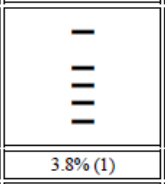
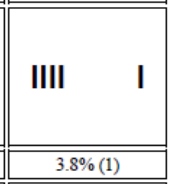
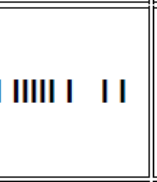
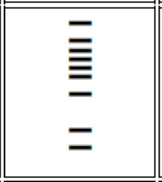
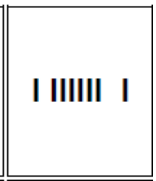
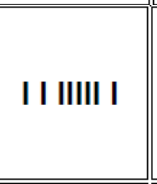
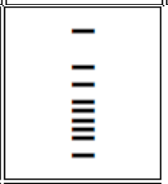
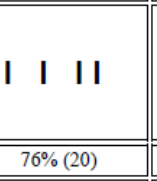
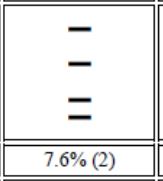
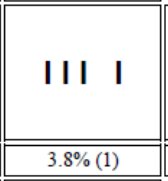
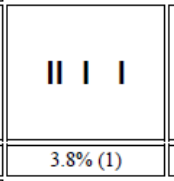
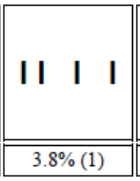
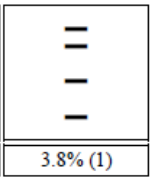
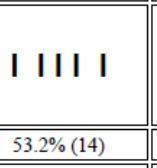
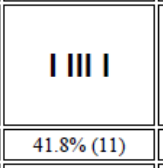
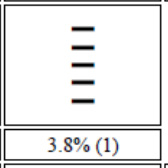
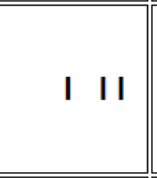
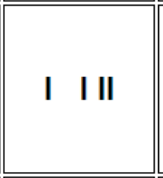
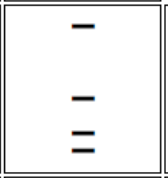
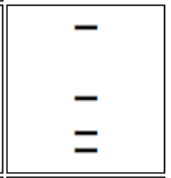
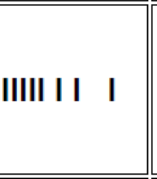
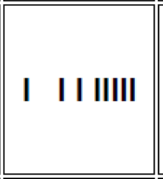
I								
		26.6% (7)	3.8% (1)	3.8% (1)	45.6% (12)	15.2%(4)	3.8% (1)	
J								
		45.6% (12)	15.2% (4)	15.2% (4)	11.4% (3)	3.8% (1)	3.8% (1)	3.8% (1)
K								
		26.6% (7)	26.6%(7)	19% (5)	11.4% (3)	11.4% (3)	3.8% (1)	
L								
		45.6% (12)	19% (5)	11.4% (3)	7.6% (2)	7.6% (2)	3.8% (1)	3.8% (1)

The range of responses is higher than any of the Japanese groups or the pilot group for the forced-choice investigation. One participant did not complete the forced-choice investigation.

Table 26 shows the participant preferences with selected shapes for the forced-choice representation of attack rate, in order of preference:

Table 26: Selected attack rate visual stimuli for forced choice experiment by Papua New Guinean participants familiar with WSN

WSN	Shape & participant preference					
A						
	91.2% (24)	3.8% (1)	3.8% (1)			
B						
	83.6% (22)	15.2% (4)				
C						
	53.2% (13)	26.6% (7)	7.6% (2)	7.6% (2)	3.8% (1)	

D						
	64.6% (17)	26.6% (7)	3.8% (1)	3.8% (1)		
E						
	79.8% (21)	11.4% (3)	3.8% (1)	3.8% (1)		
F						
	83.6% (22)	7.6% (2)	3.8% (1)	3.8% (1)		
G						
	72.2% (19)	7.6% (2)	7.6% (2)	3.8% (1)	3.8% (1)	3.8% (1)
H						
	72.2% (3.8)	19% (5)	7.6% (2)			
I						
	76% (20)	7.6% (2)	3.8% (1)	3.8% (1)	3.8% (1)	3.8% (1)
J						
	53.2% (14)	41.8% (11)	3.8% (1)			
K						
	45.6% (12)	38% (10)	7.6% (2)	7.6% (2)		
L						
	76% (20)	19% (5)	3.8% (1)	3.8% (1)		

Vertical representation of time for this forced choice design was between 1 and 4 participants, which is lower than both Japanese groups (B1 and B2). Responses in terms of selection seem closer to the pilot group of British nationals.

3.5. BenaBena Participants (Kenimaro / Eastern Highlands District)

Group C2: Twenty seven 'musicians' (mean age by estimation = 57.2years; 16 males, 11 females; 27 Right handed 0 Left handed) participated in the experiment. Handedness of the participants was established by asking them with which hand they used common farming tools amongst the Highlands of Papua New Guinea, such as machetes or a cangkul (=hoe). The participant mean age for starting a musical instrument (from provided responses by estimation) was 13.9 years, while the mean age of performing a musical instrument was 42.2 years (this number may not be accurate; performers might not have been actively performing music throughout this span). Participants provided responses for 'music making' and participation in sing-sings and traditional community ceremonies. The majority (96%) had/have taken part in sing-sings since they were very young children. Recruited participants were non-literate (in terms of language) and were not acquainted with any music notational system. Participants were from the BenaBena tribe and came from six hamlets (Keni, Logo, Sifu, Opeks, Siopeks, Moweto). They were recruited through the help of a local school teacher (Mr. Prutson) who was fluent in English and acted as a translator, and also through a local coffee merchant (Yanameto Mopafi) who provided me with accommodation and assisted me throughout my stay among the BenaBena community.

3.5.1. Free-drawing investigation results from BenaBena Highlanders

The majority of responses in terms of directionality of script were left to right, with noticeable exceptions for abstract pictorial responses that did not seem to follow any

pattern of directionality, or positioning on the page. It has to be noted that on two occasions for the free-drawing responses with attack rate as the variable parameter, I had to 'clap' the musical stimuli to two participants. On the first occasion, the surrounding conditions (noise from the environment) made the auditory stimuli difficult to be comprehended. On the second occasion an elder participant refused to provide answers to the initial drum stimuli, stating that the sound 'was not that of a drum, it came from the music player'. He was happy to provide responses when I 'clapped' the stimuli.

Three categories emerged as to preferred scripts by participants:

i) Invented (analogue) notation, with axial representation, where time is located on x axis and the variable parameter on y axis in analogue form (Figure 26)

ii) Pictorial notation, with axial time indication, and the variable parameter represented pictorially (Figure 27)

iii) Abstract-pictorial responses, with and without a method of organisation (Figure 28)

Examples of the three categories can be seen below:

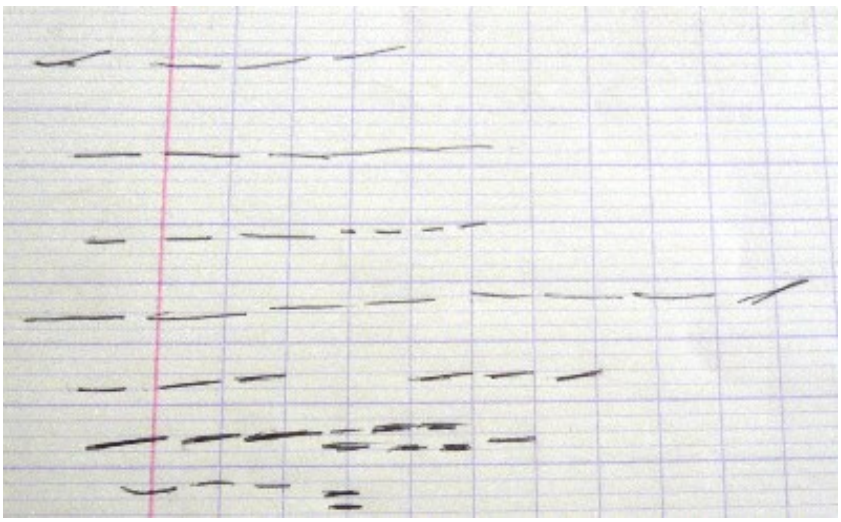


Figure 26: Invented notation by BenaBena participant representing attack rate

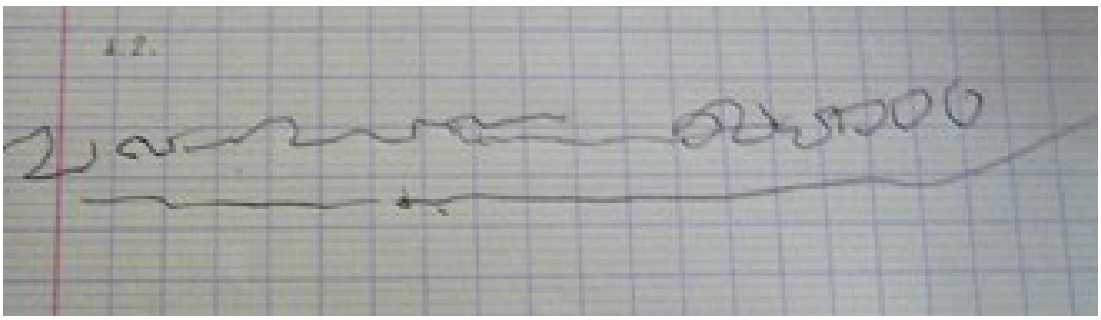


Figure 27: Pictorial notation of duration

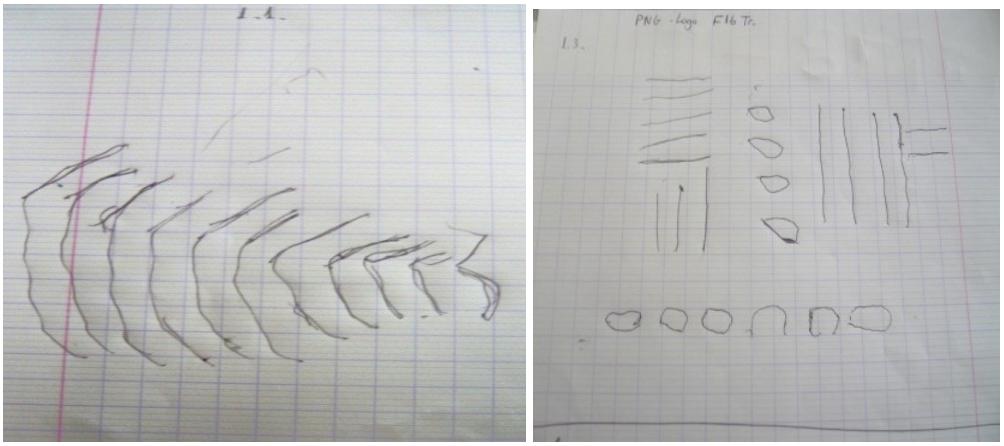


Figure 28: Abstract pictorial notation representing pitch and attack rate by non-literate BenaBenas

The different participant preferences for each variable for Part I are shown at Table 27 below:

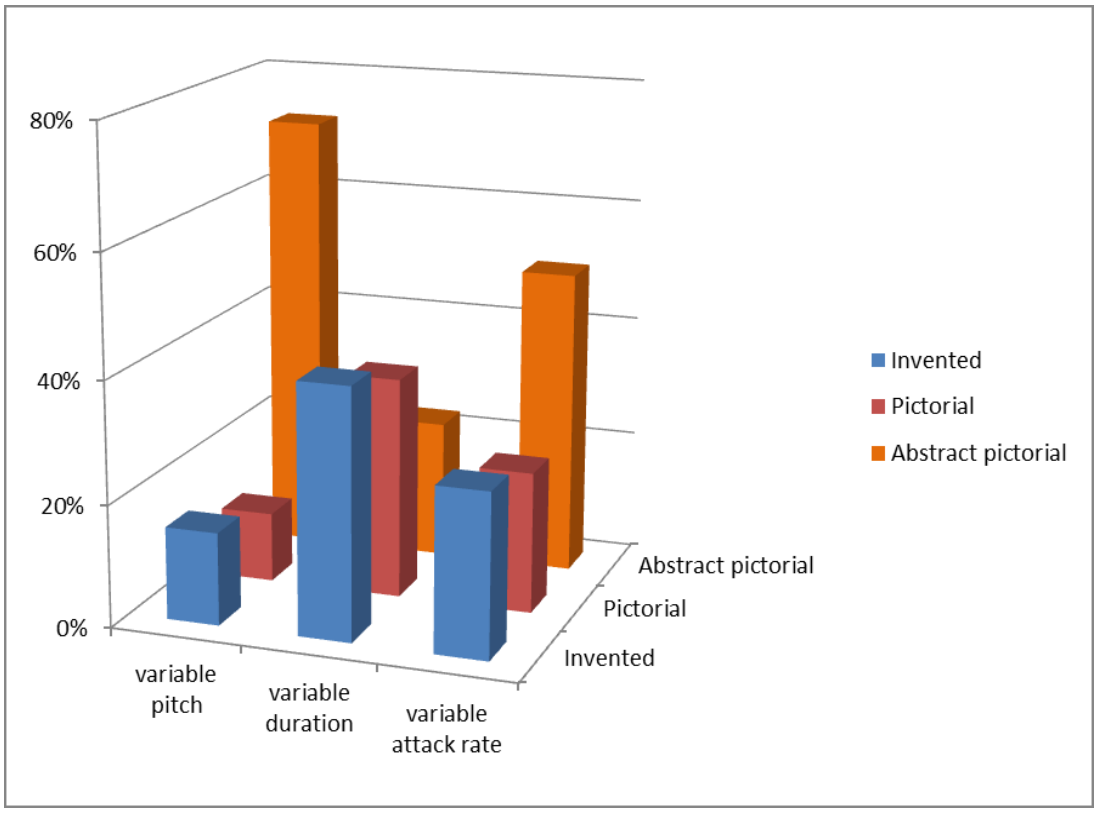
Table 27: Second Papua New Guinean group (non-literate / unfamiliar with notation) preferences for Part I. Preferences are according to method of representation and variable parameter

PART	Invented Notation	Pictorial Notation	Abstract pictorial notation
1.1. (variable pitch)*	15.2% (4)	11.4% (3)	72.2% (19)
1.2. (variable duration)**	41.0.%	36.2%	22.7%
1.3. (variable attack rate)*	26.9%	23.1%	50.0%

* = one response missing, **= five responses missing

If these scores are shown as a graph, then we get Graph 7:

Graph 5: PNG non-literate participant preference (unfamiliar with WSN) according to method of representation and variable parameter

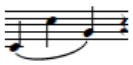
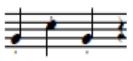
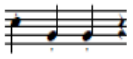
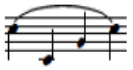
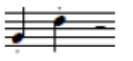
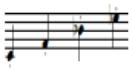
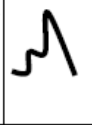
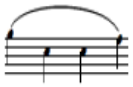
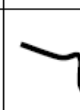
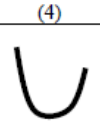
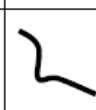
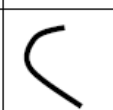
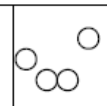
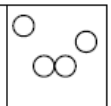
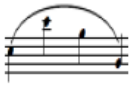
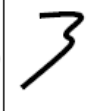
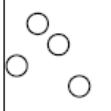
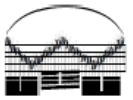
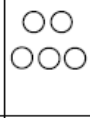
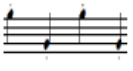
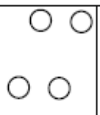
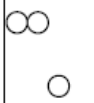


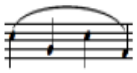
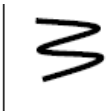
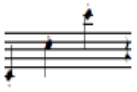
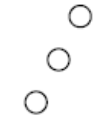
Pictorial and Abstract pictorial responses outnumber invented notation responses at almost a 5:1 ratio. When these results are compared with the first P.N.G. group, then the effect of literacy in music representation becomes quite evident.

3.5.2. Forced-choice results for BenaBena participants

Eight out of the twenty-seven participants were unresponsive to the forced-choice investigation of pitch. In Table 28 below the participant choices with selected shapes can be seen without taking into account unresponsive participants, in order of preference.

Table 28: Results for forced-choice representation of pitch for non-literate Papua New Guinean Participants

	Mnemonic	Shape & participant preference						
A		 31.8% (6)	 26.5% (5)	 15.9% (3)	 15.9% (3)	III 5.3% (1)	 5.3% (1)	
B		 42.4% (8)	 15.9% (3)	3 15.9% (3)	 10.6% (2)	 10.6% (2)	 5.3% (1)	
C		 21.2% (4)	 21.2% (4)	 15.9% (3)	 15.9% (3)	 15.9% (3)	 5.3% (1)	 5.3% (1)
D		 53% (10)	 21.2% (4)	 21.2% (4)	 5.3% (1)			
E		 47.7% (9)	 21.2% (4)	 10.6% (2)	II 5.3% (1)	 5.3% (1)	 5.3% (1)	 5.3% (1)
F		 26.5% (5)	 26.5% (5)	 21.2% (4)	 21.2% (4)	 5.3% (1)		
G		 26.5% (5)	 26.5% (5)	 15.9% (3)	 10.6% (2)	 5.3% (1)	 5.3 % (1)	 5.3 % (1)	 5.3 % (1)
H		 26.5% (5)	 21.2% (4)	 15.9% (3)	 10.6% (2)	 10.6% (2)	 10.6% (2)	 5.3% (1)	
I		 47.7% (9)	 21.2% (4)	 15.9% (3)	 15.9% (3)			
J		 31.8% (6)	 15.9% (3)	4 15.9% (3)	 15.9% (3)	 10.6% (2)	 5.3% (1)	 5.3% (1)

K							
		37.1% (7)	31.8% (6)	15.9% (3)	10.6% (2)	5.3 % (1)	
L							
		26.5% (5)	26.5% (5)	21.2% (4)	15.9% (3)	5.3% (1)	5.3% (1)

More than 60% of the participants were completely unresponsive to the forced-choice representation of attack rate, claiming that none of the images of the forced-choice design represented what they heard, even when they were pressed for a response. Those who provided responses seemed to do so merely by chance and not consciously. These results, and the range of responses for the forced-choice representation of pitch, suggest that non-literate BenaBena participants did not demonstrate a high preference for the left-to-right analogue modes of representation regarding the forced-choice design in comparison to the other groups that took part in the investigation, possibly because the pre-determined shapes did not represent their visual idea of the auditory stimuli. This aspect will be further discussed in Chapter Five.

From the above, some general remarks regarding the two groups from Papua New Guinea may be noticed:

a) Papua New Guinean musicians who were familiar with WSN demonstrated a preference for invented notational systems in representing the musical stimuli; their non-literate counterparts showed a high preference for pictorial and abstract-pictorial modes.

b) BenaBena participants openly discussed and debated answers in their groups prior to taking the test (see Chapters Four and Five). When isolated, they would attempt to argue with me or my translator about the 'nature' of the answers, despite the fact that we had made clear that all responses were acceptable for both the

free-drawing investigation and the forced-choice one. The highly communal aspect of BenaBena musical culture will be further elaborated in Chapter Four.

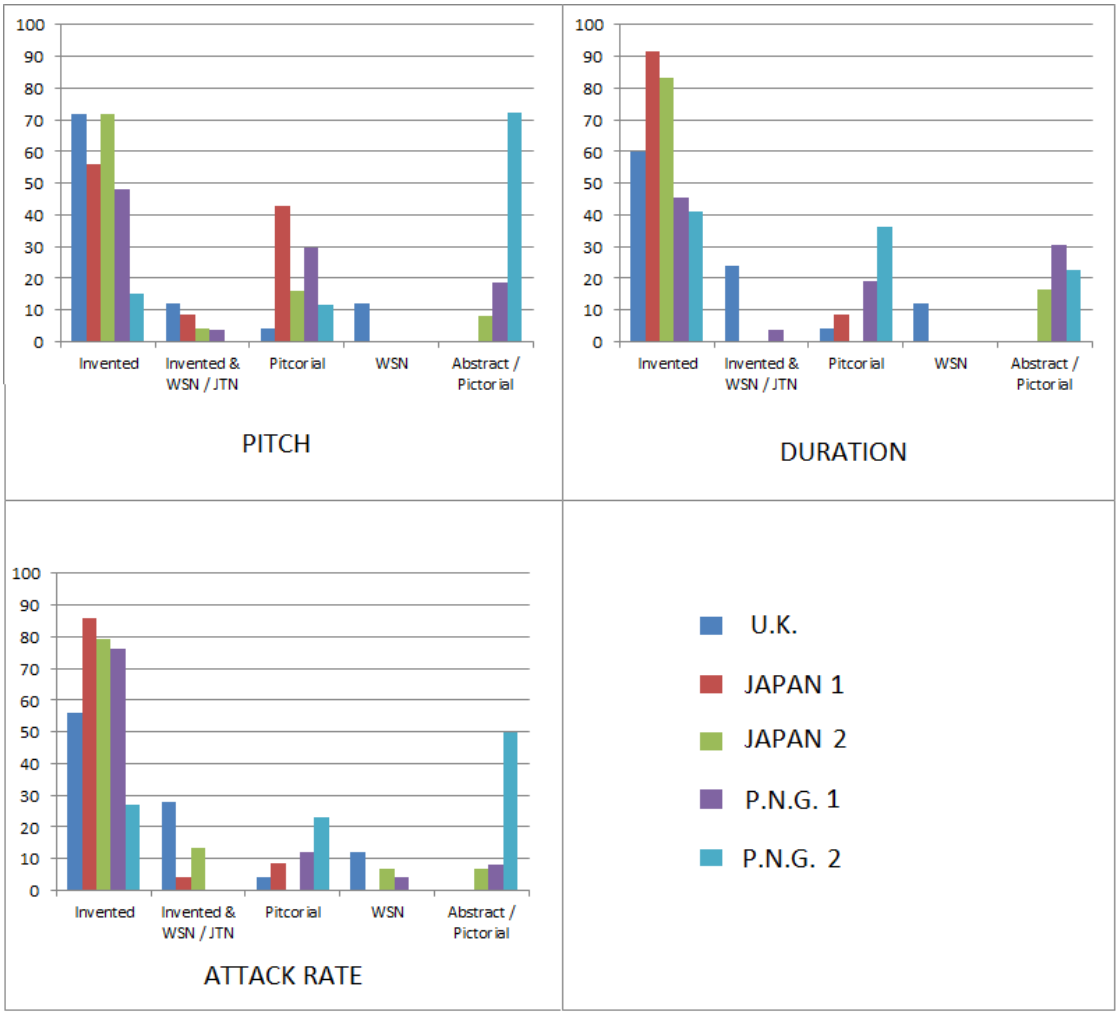
c) At the beginning, a significant number of BenaBena participants were unresponsive to both parts of the experimental procedure. This was not due to not comprehending the task, but because participants thought the task was beyond their capacity, as they did not know how to write (in any form) – this was overcome by allowing participants to accustom themselves with the task of holding a pen and drawing anything they wished.[156] Further to that, my translator suggested an alternative translation for the task, suggesting to participants to 'carve' their responses. Hence a large number provided 'physical-intuitive' responses to the sound stimuli on paper in the form of abstract pictorial notations that resemble un-deciphered executive ones, which I will further discuss in chapters Four and Five. In the follow-up interviews, the participants delivered some insight supporting this viewpoint, as they would make the claim that 'this sound comes from this shape', which would indicate that they were attempting to portray notational information of a qualitative / descriptive nature, rather than a prescriptive analogue model such as the invented systems provided by literate participants from all other groups. This may partly justify why in the forced-choice design, where the responses were fixed, the participants intuitively 'carved' their own responses to represent the sound stimuli as they felt none of the stimuli provided a descriptive system that would match their idea of symbolic representation.

3.6. Comparisons between participant groups.

In Graph 6 below, I present comparison charts between all groups regarding the representation of pitch, rhythm and attack rate respectively, for Part 1:

[156] Plain paper was found in abundance; graph paper was practically non-existent, and it was indeed quite fortunate that I had purchased large amounts of graph paper while I was still in Japan.

Graph 6: Cross-cultural comparison of the representation of pitch, duration and attack rate



From these graphs we can compare results as regards to participant responses for representing sound stimuli without assistance. Several points arise:

- Participants (regardless of cultural background, literacy or type of musical training) were able to provide invented notational systems in order to demonstrate sound in the free-drawing investigation.
- Literate participants (regardless of cultural background or musical up-bringing) were more likely to provide invented notational systems that were complex interactions between time and a variable parameter than abstract representations of sound.
- Participants, both literate and non-literate and regardless of their origin or type of musical training, tend to represent sound in a linear, left-to-right axial

representation resembling analogue notational systems, with time located on x axis. The percentage of this representational method tended to rise if participants were familiar with (any) linguistic script and WSN.

- None of the participants provided responses using text (words) other than those who used it as accompanying directives when using WSN as a method or representation.
- Participants familiar with WSN tended to represent variable parameters on the y axis at a higher rate than participants unfamiliar with WSN.
- Participants tend to use notational systems they were familiar with at limited level when left to create visualisations of sound on their own at a free-drawing investigation. The resulting representations were surprisingly familiar among groups of different cultural backgrounds, as also seen from the various figures presented earlier.
- Participants (regardless of cultural upbringing in this research) unaccustomed to western music (and in extent notation) tended to represent sound in a pictorial manner at a higher level than participants exposed to western music, regardless of the variable parameter.
- Participants unfamiliar with notational systems or linguistic script tended to provide responses in pictorial / abstract manner at a higher level than participants belonging to the same cultural group who were familiar with linguistic script.
- Participants (regardless of cultural background) familiar with WSN did not provide abstract representations of musical sound higher than 20% of their respective group.

3.7. Directionality of responses.

The first part of the experiment permitted participants to depict the representation of time freely. Although a higher number of Japanese participants were expected to demonstrate vertical representations of the sound stimuli, this method was in the minority (below 10%) for both Japanese groups, those familiar and unfamiliar with

Western Standard Notation. For Papua New Guineans, one non-literate participant (out of twenty-seven) provided vertical pictorial representations.

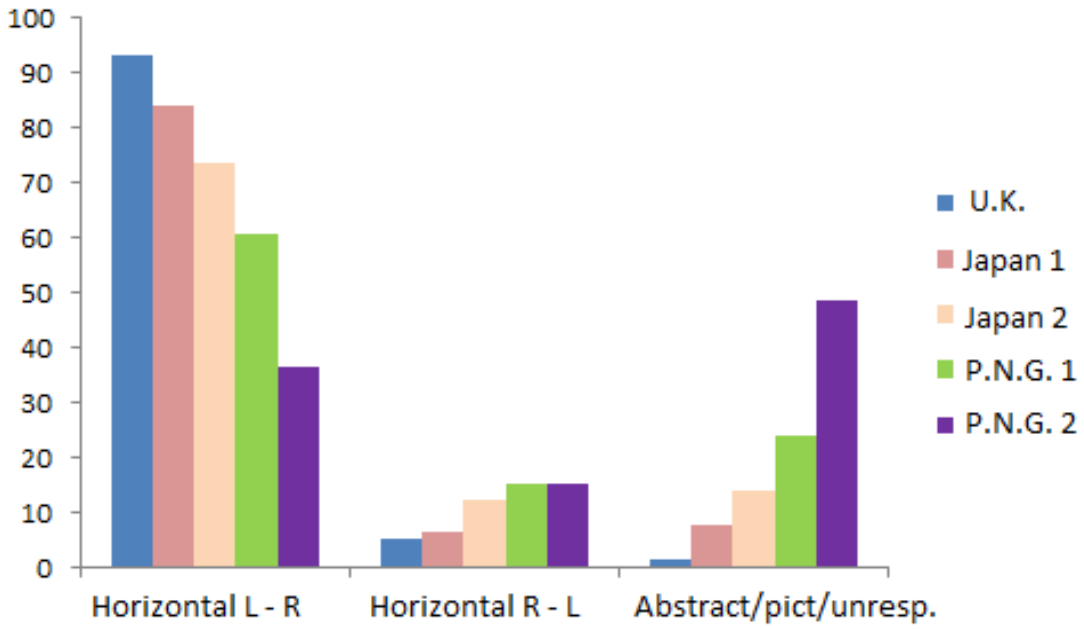
Regarding the directionality of the visual stimuli for the forced-choice design of the investigation, the following table (Table 29) and subsequent graphs may be consulted:

Table 29: Conclusive Table for all groups for forced-choice representation results regarding directionality

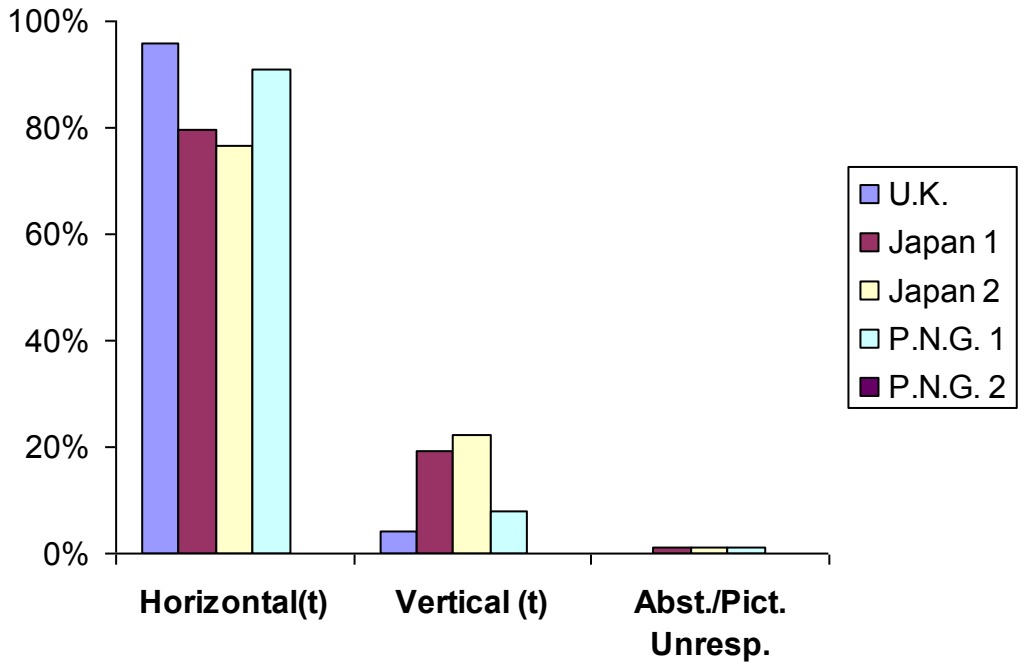
Participants	Forced-choice representation of pitch			Forced-choice representation of attack rate		
	Axial hor.(t) left to right	Axial hor.(t) right to left	Abstract	Axial hor.(t)	Axial vert (t)	Abstract
United Kingdom	93.2%	5.4%	1.4%	96%	4%	0%
Japan (familiar with wsn)	84%	6.3%	7.7%	79.8%	19.2%	>1%
Japan (unfamiliar with wsn)	73.6%	12.4%	14%	76.7%	22.3%	>1%
Papua (familiar with wsn)	60.8%	15.2%	24%	91%	8%	1%
Papua non-literate	36.4%	15.1%	48.5%	UNR	UNR	UNR

Graph 7 below depicts a cross-cultural graphic representation of horizontal directionality in pitch, while in Graph 8 a cross-cultural graphic representation concerning directionality in attack rate may be seen:

Graph 7: Cross-cultural comparison of horizontal directionality in pitch for the forced-choice investigation



Graph 8: Cross-cultural comparison of forced-choice representation of attack rate



The main point arising from the forced-choice comparison is the rise of vertical responses in the representation of attack rate, and the verification of high levels of pictorial / abstract pictorial & unresponsive representations of pitch for Papua New Guineans and Japanese participants unfamiliar with WSN.

3.8. Articulation and directionality in the forced-choice investigation.

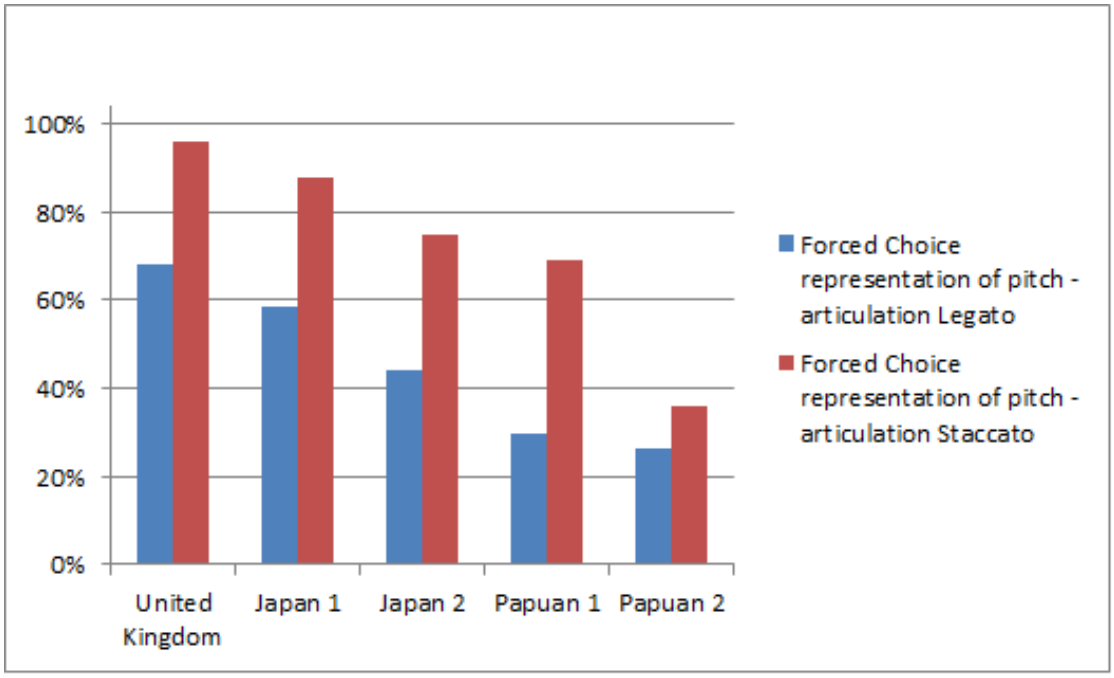
Concerning articulation (legato / staccato) participant preferences may be seen on Table 30 below. The table contains forced-choice participant responses who indicated legato auditory stimuli with a visual stimulus which indicated pitch linearly (for example, selecting the first option (Option **1**) to represent stimuli numbered **A** from Table 11 in 2.6.1) in the first column under 'legato'. The second column contained participant responses that indicated staccato auditory stimuli with a visual stimulus which indicated responses with a dot (for example selecting the third option (column **3**) to represent stimuli numbered **B** (line **2**) from Table 11 in.2.6.1). Responses were presented by participant group. The first line in Table 30 for each participating group contains all responses regardless of directionality, including visual stimuli that were not direction-specific. The second line differentiates between the horizontal direction of the visual stimuli participants selected – for example, in Table 11 in 2.6.1, visual stimuli 1(horizontal L-R) and 8 (horizontal R-L) are mirror images of the same sound event. Responses for these forced-choice sound events which resulted in identical mirror images when inverted horizontally where not taken into account for the resulting tables (such as sound stimuli B and I from Table 11, and A and F from Table 14).

Table 30: Conclusive Table for all groups for forced-choice representation of pitch regarding articulation and directionality

Forced Choice representation of pitch - articulation				
Participants	**Legato**		**Staccato**	
United Kingdom	68%		96%	
	L-R: 67.2%	R-L: 4.8%	L-R: 95.2%	R-L: 0
Japan (familiar with wsn)	58.4%		87.9%	
	L-R: 56.4%	R-L: 8.3%	L-R: 87.3%	R-L: 1.8%
Japan (unfamiliar with wsn)	44.1%		75%	
	L-R: 39.4%	R-L: 9.3%	L-R: 74.4%	R-L: 4.2%
Papua (familiar with wsn)	29.8%		69%	
	L-R: 20.1%	R-L: 12.5%	L-R: 62.3%	R-L: 6.9%
Papua non-literate	26.4%		35.8%	
	L-R: 17.4%	R-L: 14.3%	L-R: 26.7%	R-L: 7.9%

See graphic representation of data below in Graph 9 depicting the articulation of pitch.

Graph 9: Cross-cultural comparison of forced-choice representation of pitch / articulation regardless of directionality



It has to be noted that for the forced-choice investigation, representations of time were primarily investigated through the forced-choice representation of attack rate as variable parameter, where the nature of the visual stimuli permitted their depiction of

directionality as both horizontal (left to right, right to left) and vertical (top to bottom, bottom to top).

Pitch as a variable parameter permitted this investigation at a limit, since the bulk of the visual stimuli were analogue invented notations with differences focusing largely on shape and form but not on directionality. The aim was to see whether participants would demonstrate a preference for these analogue pitch notations with a H-ltr directionality.

Therefore, regarding H-rtl directionality of pitch (Graph 7) it remains low across groups; it is noteworthy to mention that literate and non-literate Papua New Guineans had similar results (15.1% and 15.2%). As for the Japanese, the group unfamiliar with WSN and English had double the percentage of the group familiar with WSN (12.4% to 6.3%).

From Graph 9 (cross-cultural comparison of forced-choice representation of pitch / articulation) it is observed that for all cultures staccato auditory stimuli were more readily associated with point – indication of pitch change, than legato stimuli were with linear depictions of pitch change. Differences between British and Japanese participants familiar with WSN (Japan 1) from the other groups could be justified due to their knowledge of an analogue notational system such as WSN, which represents staccato articulation by dots. However, Japanese traditional musicians (Japan 2) also scored relatively high. Low scores from literate Papua New Guineans (Papua 1) could suggest that this is due to their lack of using WSN regularly in performance. As for the non-literate group (Papua 2) it is noteworthy that they still showed preference in associating staccato auditory stimuli with point – visual stimuli at a larger percentage as with legato auditory stimuli and linear visual stimuli. Although the percentage scores for this association by the non-literate group (35.8% for staccato and 26.4% for legato) are above chance, they suggest that auditory stimuli with staccato / legato articulation should not be automatically matched with dot / linear visual representation respectively.

3.9. Conclusion for Chapter Three

In order to fully comprehend the quantitative responses presented in this Chapter, it is considered vital to ask not only *what* the participants produced or selected in terms of visual representations of sound, but also *why*. The reader might be skeptical as to the cross-cultural comparisons between the groups, as they differed greatly not only in terms of their cultural background, but also to their abilities. That being said, if we are willing to investigate musical communication cross-culturally, imperfect translations ought to be acceptable, which to an extent, means that comparisons, at some level, are unavoidable, even if the participants vary greatly.

The comparisons which stemmed from the quantitative research can only obtain meaning if we are willing to compromise and accept all participant responses as credible, valid representations of free-drawing paradigms. Therefore, the qualitative investigation was closely associated with each performer's individuality as a person and as a member / representative of his culture. This qualitative part was conducted through interviews and observations, recorded through video and audio, and analysed through my own interpretation of symbolic interactionism as introduced in section 1.9 of the first chapter, and further elaborated in the second chapter (2.7.1 & 2.7.2). This methodology will be presented in detail during the analysis of qualitative data in Chapter Four.

Chapter 4 - Qualitative material / Ethnographic approach

'Tradition is, in its very essence, unconscious. Tradition molds us, but we are always inside the mold and cannot look at it from the outside.' [157]

4.1. Introduction to Chapter 4

In this chapter I will attempt to make sense of the quantitative material presented in the previous two chapters in relation to the cultures drawn from. The principal method of data collection was through participant observation and semi-structured interviews carried out on location in Edinburgh, Kyoto, Tokyo, Port Moresby and the BenaBena villages. In order to investigate which elements affect the representation of music, an in-depth quantitative analysis (as the one carried out in Chapter Three) may be one way to approach this argument: by examining the depiction of time, the spatio-temporal perception, the effect of written language on cognitive abilities in a cross-cultural context, credible results may be obtained.

However, this may not be enough. Apart from cognitive abilities, I hold that culture, as it is manifested through invention and practice, are the determinant factors in the representation of music. Therefore, the following analysis will aim to provide a window into the philosophy behind musical systems of the cultures being studied, on top of any tendencies brought forth through the quantitative results.

Although misconceptions might arise while comparing completely alien musical cultures with almost no common ground (which is, in essence, what is attempted here), it had to be seen in the field whether the experimental procedure functioned for all three distinct cultures in an equal manner. Experimental psychology paradigms suggest that to be objective is to be free of context. At the same time ethnomusicologists stress the importance of meeting participants in their own terms. These two conditions proposed were very difficult to combine for the quantitative

[157] Gjessing, G. (1968). The Social Responsibility of the Social Scientist, *Current Anthropology* 9(5), p.400.

part of my investigation, as minimizing the importance of cultural experience in music for people who view music *as* a cultural experience leads to a dead end. In order for cross-cultural tests to be objective and fair, they must try to incorporate all elements that are cross-culturally compatible.

While I was set on verifying my intermediate hypothesis in Chapter 1.2, it came to my attention that the BenaBena tribe, just like the Japanese traditional music performers of Noh theatre I interacted with in Japan, have a completely different viewpoint from that of any western musician or non-musician when it came to understanding the role and function of music, what consists of an 'active musician,' as well as the relationship between music and its visual representation. Among the BenaBena tribe, a musician connotes any person who is playing music at the moment of speaking – which suggests that any person is potentially a musician. To explain this from a western cultural viewpoint, any person who is running, from Usain Bolt in the Olympics to me chasing a bus,[158] is considered a runner. What modern research sometimes fails to take into account is that participants (and researchers) in experiments take it for granted that a) sonic events can be represented visually and b) it is absolutely natural and normal to depict sound visually. Varying viewpoints of the role of music in society are rarely explored and taken into account; if the visual representation of music is non-existent in a society, how would this affect results relating music and its depiction? Further to this, the majority of British, Japanese and literate Papua New Guinean musicians demonstrated through the free-drawing paradigm that they experience the relationship between music and shape through existing modes of analogue representation, while the non-literate BenaBena adopted an 'abstract-pictorial' approach to the task. When discussing results from the free-drawing investigation, literate participants showed the relationship between music and its visual representation as bound by existing norms of formally representing music (such as notation), which is also reflected from high percentage scores of 'invented' notation as a method of representing sound stimuli. Therefore, slightly

[158] Let me say that by no western standards could I ever be considered a runner – I weigh one hundred and ninety pounds and have been smoking for twelve years. I find stairs, on occasion, un-negotiable. However, if the BenaBena saw me running, I would be considered as much a runner as anyone competing in the Olympic Games.

broadening the viewpoint of this investigation to include the aspect of musical notation was considered necessary for this and the following chapter.

For these reasons, and in order to fully comprehend the cultural aspect, while conducting the quantitative aspect of my research I kept a detailed fieldwork journal of anything and everything that was taking place around me – this, apart from including opinions on the relationship on music and its 'free' representation as shape, included the structured method of representation, which is musical notation. As a result of this participant observation I was able to collect roughly three hundred pages of ethnographic data related to music from the communities I was based in. Further, through semi-structured interviews I was able to acquire information that could be disseminated through a specific qualitative model presented shortly below.
I have to note that the task of locating participants who filled the criteria for the test has not been easy, since as I have already mentioned in the second chapter it is very difficult to establish what a 'pure' traditional musician is. I have presented studies in the bibliography that provide evidence that, at least for some domains, music affects emotion and possibly cognition, offering invaluable insights into how humans experience musical thought. But the reality of the matter is that hardly anyone becomes exposed only to one musical style throughout their life, without ever experiencing sounds of other cultures – especially in today's era. The vast majority of musicians, particularly in the West, could arguably learn another musical style at some point in their lives, most commonly Jazz, Rock, Blues, BritPop. Furthermore, some might also learn another notation system such as tablatures or Jazz chords. Exposure to at least two different styles can very well be the norm rather than the exception in the majority of the world's countries, even if the separation can only be done at a native versus foreign level. Even in traditionally 'musically isolated' countries (an impossibility in itself, since music is not usually confined within boundaries) exposure to 'foreign' music is increasingly becoming more and more prevalent through the expansion and availability of technology, changing the music landscape of much of the world in recent years. In addition, western- style musical

instruments[159] make their appearance everywhere and with them arises a need for a new musical language.

Figure 29: BenaBena children creating a Bandicoot trap out of an old guitar. Kenimaro, 2010

The purpose of the fourth chapter can be summed up as follows: If the various musical styles and languages encode reality and the world differently, and if musical experience may impact heavily on our cognitive outlook towards reality and the world, could culture provide personal and social musical realities which would lead to a divergent understanding of representations of sound? Through the perspective of symbolic interaction as presented in 1.9 and 2.7, I intend to demonstrate the relation between participants and the score at both the personal and community level, and how such relations are shaped, altered and discussed through cultural conventions and interactions.

[159] When these instruments have run their life cycle, the BenaBena find new uses for them, as seen in Figure 29; Carlos, my translator's son, acquired a guitar broken in half out of which made a trap to catch small game in the bush.

4.2. Western World of 'structured' musical representation: Edinburgh, United Kingdom.

In an attempt to negate differences in the *Me* factor as presented in Chapter 1.9, my participants from Edinburgh had to fulfil some specific criteria in order to take part in my research. All were from the same culture (British nationals, native speakers of English). Most had had classical music training in a variety of instruments up to Grade 8 level and above, and an average of 15.7 years of active performance in classical ensembles. All data collection took place through semi-structured interviews after the quantitative part and was recorded by video. Most participants were undergraduate music students from the University of Edinburgh, and a small minority were recent graduates employed as musicians in and around Edinburgh. It is important to stress that, although my participants received classical music training, it would be naïve to assume that they had not had any contact with other musical styles as performers. Musicians are likely to play a wide variety of music in their lifetime, ranging from Albinoni to Art Tatum to Adele. Even if their performance repertoire stayed within what is considered to be western 'art' music it is diverse. The genre itself has been in existence for more than four hundred years and has faced many changes in style, starting from polyphony to avant-garde experimental cacophony of reducing pianos to firewood on stage. These performers had seen it all, and played most of it. By analysing the interviews conducted, I intend to show how they feel and relate to this tradition, starting from late polyphony to post-modernism, and their attitudes towards how music is represented visually on paper. In other words, how their *I* selves responded to the musical world's *Me,* and how they responded to the object of musical representation is of central concern.

It is beyond any doubt that the primal reason for musical representation to emerge in a formalized structured manner in the form of musical notation, similar to written speech, was the need for a mnemonic tool for a musical tradition well in place, as we have seen in the first chapter. Although it was initially thought this formalized method of musical representation rather quickly came to determine the musical tradition of its origin, this seemed to happen only in the West. In most other places,

the musical text as a method to depict sonic information in two-dimensional form retained its archival and recording role, and as such it was primarily used as a reference and mnemonic aid; it never took over the role of the tutor, and was not often used directly for composition. On the other hand, western music and music theory of the last two and a half centuries have evolved in such a rapid way partly because of their modes of representation and theoretical systems (notation, modular ordering, scales, and harmonic systems). The development of a formalized, musical writing system permitted the rise of the *S*core. Consider the following quote:

> 'It is quite common to think of certain musical works such as Bach's fugues or Beethoven's symphonies as though they were sacred texts in which the 'Commandments' of music are wondrously revealed anew at each performance. Composers of these sacred texts are accorded godlike or demigod status [...]. The activities of their interpreters and explicators (conductors, instrumentalists, singers, theorists, historians (parallel those of the clergy and biblical scholars; musical study and performance are, in many ways, conceived as exercises in exegesis. As in religion, music too has its fundamentalists: those whose interpretations claim to be based on the musical text alone or for whom the only valid version of a work is one proven to have come directly from the composer's own hand. Music historians and theorists are entrusted with preserving the holy texts and sacred objects for the study, use, and worship of future aspirants.'[160]

The growing self-confidence and independence of composers had its beginnings in German romanticism, resulting in a mindset change of the composer's status. The public, mesmerized at first by such extrovert and defiant explosions of individual self-promotion, created the status of (either composer or performer) genius. The composer was perceived as detached from society, and his music was removed from public reach and put on a stage to be observed in silence. In turn this caused what I consider to be a significant change in the composer-audience relationship, since the cycle of Modification and Interpretation leading to a new physical objective reality (as seen on chapters 2.7.1 and 2.7.2) was detached from social interaction, and the

[160] Randall, A. J. (2002). And Art Shall Say, 'Let There Be Light': Religious Imagery and the Nineteenth-Century Musical Imagination,' in *Art and the Religious Impulse*, ed. Eric Michael Mazur (London: Associated University Press, 2002), p84.

continuum of musical and socio-cultural variables affecting music now lacked one of its key proponents. This, I believe, was the result of the formalized method of depicting musical information in a two-dimensional manner, such as WSN.

Although WSN may have played a part in preserving musical works, which lead to the rise of the composer-genius described above, the positive attributes of being raised in a highly musically literate society diminish as the thought that music can be totally defined in terms of its notation gains support, thus excluding whole categories of music from serious theoretical study (such as electronic, ethnic, and indeterminately-notated music). T.F, a composer and violinist by trade based in Edinburgh, speaks of this limitation:

G.A: *Do you think that, standard music notation could be used to transcribe music from non-western countries?*

T.F: *I think it could be used…but it, um, standard notation is quite good at recording the pitch as it is understood in western culture I suppose, um, so it will tell you whether the note is an A or a B and it will give you the rhythm which his divided into fours or eights, um, so I think you, once you start notating using western notation you are, um , the music is constrained to that form, that musical understanding, counting in beats and using particular pitches, there's not much space for microtones or anything like that. That's a limitation I suppose.* […] *I know from personal experience that when I write music, I think in terms of notation, um, and I can see the notes written down on paper as I write, and that sort of informs me during the composition process. So my composing is very much - and performance - is very much influenced by the notation, the method of notation, and it may be that the music of another culture that uses a different notation is inspired by that.*

G.A: *What power do you think that notation holds over a musical piece, is the piece the notation? In relevance to what you just said.*

TF: […] *I remember once composing by writing down, and also by using a music programme on the computer were you write the music on the stave and it will play back to you what you've just written, and I was advised to move away from that style of composition because my work was becoming too focused on what note follows what, and that, you know, that semi-quaver should match with that one, with that*

dotted semi-quaver to-to make up the bar, and that sort of thing, and maybe to use my ears more. I think it can become a visual style of composition when you're trying to work out which notes go on what stave and how it follows, and you know, the visual stave of music. I'm not sure if I answered your question actually!

G.A: *Do you think that notation influences a musical piece?*

TF: *Yes….*

G.A: *Alri-*

TF: *Actually I just want to qualify that by saying 'only if it's written with notation in mind'.*

A significant change occurred in the West around the end of 1950, regarding the formalized method of musical representation. Composers could not express the new style of music they were creating with WSN and reverted to what could be termed as 'musical ideograms', or graphic scores. Since then, it was up to the individual composer to use his own mixture of representational method on paper, often mixing WSN with graphemes of sound in order to express his musical idea to any possible performers out there willing to have a go at his compositions. Graphic notation started to represent a liberation, and in the minds of the composers, benefiting social interaction. Modern composers using a blend of WSN and other forms are now the normality. Interestingly, after the change of attitude towards the musical canon and the introduction of popular music into the academic teaching and research academia determine, performers have also broadened their perception and attitude towards what was once the 'sanctity' of the formalized method of musical representation. B.E., a classically-trained percussionist says:

G.A: *What power do you think that notation holds over a musical piece?*

B.E: *Depends on what you're looking at.*

G.A: *Well in the sense that, is the [musical] piece the score or its performance?*

B.E: *I don't think the piece is the notation; notation is just a simple one way of representing…the musical intention of the composer…I mean…yeah…I mean…there's plenty of other cultures which don't use it [notation] at all, or you know, there are people like jazz musicians or people who may be well versed in*

notation but that's not how they choose to communicate with each other anymore…you know they write a score and they're like 'we're just gonna impro'…or you know, improvising musicians they're gonna improvise in, in, um, in G and they'll do that for ten minutes, you know, and that doesn't use a score, and still they know what they're gonna do…

G.A: *It's a very interesting point that you're bringing up, in this sense …so how do you feel if I asked whether notation can hold power over a performer of a piece?*

B.E: *Not really, I mean I can choose to ignore the notation.*

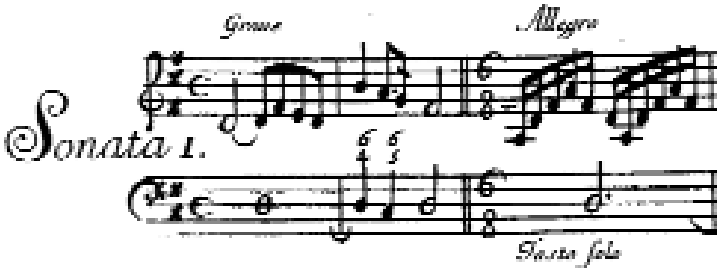
G.A: *What do you think the composer would think of this, then?*

B.E: *Depends, I suppose on what sort of person he's like (laughs)…no, no, but I mean like, nine times out of ten or like, ninety-nine per cent of performances of no-no-notated pieces of music the composer is not present.*

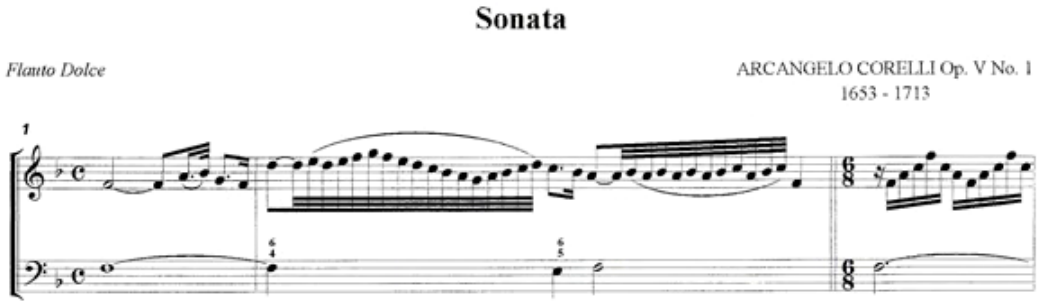
G.A: *Mmm…*

B.E: *So, you know, even though it says, you know (fake voice) 'you're supposed to follow the score exactly', and a, a performer may be brought up and educated in a way that (fake voice) 'for scores there you're supposed to follow exactly unless otherwise indicated' you still have the choice to completely ignore it. I don't think a lot of people would* [ignore it]*…but that's still your choice, you can completely veer of it, or you'd be like, you know…re-contextualizing the score. The score is like, an indication of intent, you follow the intent or you can completely throw it out the window.*

Interestingly, composers prior to the late 18th century left a great deal of the contextualization out of the score when they handed it over to musicians / publishers, thus permitting individual expression to the performer. Examine the differences between Arcangelo Corelli's original notation of the first two bars from his first Sonata in D major for Violin and Cembalo in 1700, op 5, and below a modern rendition of the same sonata transposed for flute from SCHOTT editions (2003) based on a 1710 edition (Figure 30):



1700 edition



1710-2003 edition

Figure 30: Sonata I for Violin and Cembalo by A. Corelli, op. 5 transposed for flute

However, performers occasionally think that the older the piece (i.e. Baroque, or older), the truer they should be to what's written down, while for romanticism they believe that there is more room for interpretation. The gravity of the composer's musical text surpassed the idea that notation is just the blueprint for a musical sound-event. LAH, a piano teacher, reveals this rationale:

G.A: *Do you think that, um, what power do you think that the notation holds over a musical piece? Is the piece the notation?*
LAH: *I think it would depend on which period it came from, um, stuff from the baroque and renaissance era is very strictly rhythmic to follow and the harmony is there, whereas if you go to a piece of sort of, twentieth century, or even, even romantic stuff where it says rubato, that's, there's no exact way of doing rubato in a piece, everyone's gonna do it differently I think. A performer can interpret that any way he or she wishes, um, I don't know. It's like, um, it's like what the composer is like trying to get across, it's just indications, it's just like, you're the performer, you're playing, but the composer wishes to say that.*

G.A: *Based on that, what power do you think that the notation holds over a performer?*

LAH: *Um, quite a lot in the sense cos that, um, people are always like, European, other people performing and if it's not right to them, you know a bit like, they're always like, (fake voice) 'Hah, you know it's not the music, so yeah, it's not to the notation, it's not right.'*

She acknowledges that although notation is just an indication, in the Western Classical tradition there is little leniency when it comes to following directives given to performers through the means of a score, but supports the idea that romanticism permits interpretational mannerisms. It truly is a marvel how practitioners of 'classical' music developed this idea in the first place, as Baroque musicians were not tied to the notation; Corelli's score above was not an exception, but rather the rule of a product created by musical editors, and not performers. [161] T.F., the violinist, also sees the truth of this. However, he envisions music as a narrative to be told: The composer may use his way to express it, but the performer may add his creative input into the story, turning the *I* of the composer into a *Me* by the performer:

G.A: *What power do you think that notation holds over a performer?*

T.F: *I think that in, um, there's a tradition in what you might call classical music, western classical music, to…that the notation is the piece of music itself. Um, so you start by learning every note as it is written and following the dynamics and the expressions written on that piece of paper, that piece of paper is what you perform. Although from that point, once you know the piece as it has been written, there is room for interpretation and expression in that piece of music. But I think, um, for me as a performer, um, I use the – I-I use the written notation to work out how to play something. Then when I perform it I interpret it as I choose.*

[161] For contextualisation, a paper discussing the ideals of authenticity versus modification in musical editions and publishing is the following: Kelly, E. (2006). Evolution versus Authenticity: Johannes Brahms, Robert Franz, and Continuo Practice in the Late Nineteenth Century. *19th-Century Music*, Vol. 30, No. 2 (Autumn), pp. 182-204.

G.A: *So you think that interpretation is a different matter from what's actually scored*.

T.F: *I think so. I think it's like reading a story. To know a story, you read and you can then understand the story. But then to tell a story, it's very different and, you may choose to substitute words, or, you may tell it with different emphasis, or you may, you know, um, it's, when you tell a story it's-it's you may not be accurately copying what you've read, but you're interpreting it, um, as-as you understand it on a different level.*

The idea of the musical narrative brings another aspect into focus: in order to follow and process a story (in order to narrate it ourselves), listeners have to *understand* it, give an interpretation to it, without involving a visual parameter. This understating is not granted, as it suggests a cultural listening of the musical narrative so as to produce culturally meaningful interpretations of the music. If a western-cultured musician / performer / listener *understand* the intentions of a Beethoven late quartet, the same cannot be expected by everyone who did not have similar 'training' or cultural upbringing. In direct contrast to this notion, the anecdotal evidence I have to offer is the following: On request of the BenaBena villagers to listen to a famous piece of western 'good old' music (I note the 'good old' there), I played Bach's orchestral suite no. 3 in D Major, BWV 1068 telling them that 'this piece on the radio (actually an mp3 player) is about ten generations ago, three hundred years old'. They sat in silence, listening.

When the piece was done, one of them said: *'Luk, waitpela gat radio tri handet yia, bipo tru. Bilong wanem? Dispela taim wipela kaikaim wanpela narapela, tasol. Em, nau tasol! Em i hia singsing harim,'* which, more or less I understood it to mean as: 'Look, white men had radios three hundred years, that's long ago (a long time ago?). What for? At the time we eat (ate) each other. [But] Look at him (also meaning well done to him). He (is) here (to) listening (to our) music.' No comment about Bach and his Air.[162] Similarly, other researchers in Papua New Guinea found their participants

[162] On learning that I had been to Japan, my Papua New Guinean participants also insisted on listening to 'good old' Japanese music. I played for them a recording of a Noh play. As soon as the Nohkan started (high-pitched flute used in Noh theatre) they fell over laughing, saying that's the sound of a pig. I believe this adequately demonstrates Nettl's notion of 'untranslatable' cultures.

to be more interested in what made a tape-recorder work rather than the Beethoven piano sonata that the recorder was playing at the time. Regarding the 'universal' perception of music as happy, sad or otherwise indicated at times by (primarily) music psychologists and others,[163] I believe it is because native participants of non-western groups have familiar modes of musical expression and therefore can relate by experience, as examined by Blacking among the Venda, by Feld among the Kaluli, and more relevant to this research, by Langness among the BenaBena. This does not mean that their interpretations of *meaning* are in any way similar to western ones.

4.3. Inner Views to the Western World of formalised musical representation.

From the material collected using interviews, two points are made apparent towards the visual representation of music, which both involve interpretation: i) the musical text, as a formalized method of musical representation, carries the minimal necessary information for a musical performance; it is to be seen as directions given by the composer to the performer for music to be created ii) the performer takes information given by the composer and gives his/her own interpretation of it to the audience. This perspective, in my opinion, is now prevailing among younger musicians and academics: the link between formalised musical representation and the music is similar to a bolt and a square nut, and it is up to the performer to play freely (as in loosening the bolt) or playing tightly and as close to the written directives as possible. Performers today have begun to see the *S*core as a guideline open to their own individual interpretation. Apart from the insight provided from the interviews above, which stem from either University students or young professionals playing in orchestras, we can see that even musicians at the top of their game in the western performance tradition share this view, always in relation to formalised musical representation, and not the free drawing paradigm investigated in the first part of my

[163] Fritz, T., Jentschke, S., Gosselin, N., Sammler, D., Peretz, I., Turner, R., Friederici, A., & Koelsch, S. (2009). *Current Biology*, Vol. 19, No. 7, pp. 573-576.

research. Caio Pagano, Brazil's leading classical pianist and Regent's Professor at Arizona State University said during a master-class session for young pianists in 2011:

> We encounter most people trying to read literally what the score says. And the score says a lot of things, but we're looking for that thing which is beyond the notes and the bars and the sforzandi, and crescendo here, diminuendo there, which is a, a safe haven for teachers. Most teachers, rely on a literal reading, very accurate, exact reading, of what's written. But then, you hear this music played this way and it's dead. It doesn't express anything, just very literal reading of the score. And as Mahler used to say: 'I printed the score as everything you need to know about the music except the essential'.

Similar statements will also appear later on from Japanese traditional music Masters as I intend to demonstrate further on. A performer's ability to see beyond the formalised textual guidelines is, according to him, the most important aspect and gift a musician must incorporate into his performance. The ability to incorporate his/her uniqueness into the interpretation of the score should be innate, and teachers should encourage their students to treating the score as guidelines to develop their own sense of the piece.

Is this possible, though, with a highly specific method of representing music in two-dimensional form, such as WSN? In western art music, a lot of the musical information is fixed in writing: a great amount of information is 'externalized' – in the sense that directives are not given just for pitch / duration / tempo / attack rate / volume control, but also for expression: dolce, molto doloroso, expressivo, among others. However, as we have seen, musicians do not favour the externalized score. During the transference from one individual (the performer) to many (the audience), this highly specific representational method comes to oppose the complex and personalized mode of performance due to its strict character, for instance, in a piano concerto, where everyone may have written directives in the form of a score in front of him apart from the soloist performer. The soloist has to 'pretend' that the music is coming as if naturally from within her, without the aid of a score, meaning that s/he is demonstrating to the audience that the music coming from her is internalized: s/he

thinks and creates it intuitively all from within herself. There is a fundamental difference between these two approaches: though an externalized piece of music based on a 'strict' performance may have high 'validity' as to the supposed intentions of the composer, it lacks the internal thought and spirit of the performer. Thus, the performer, once s/he has acquired the language (as in the basic musical information regarding the basic principles from the highly formalised method of written directives such as pitch / duration / tempo / attack rate), has to articulate the music 'in her own words', over-imposing /her own emotions as her interpretation. This would mean a re-interpretation of the physical reality of the score, something that most soloists / performers would define as 'owning the piece'. Benjamin Grosvenor (winner of the piano section of the BBC Young Musician of the Year 2004 competition, says during an interview[164] to reporter Alan Yentob:

AY: […] *How do you make a piece your own, the piece, is that easy to do?*
BG: *Well, for a Chopin Ballade I've got about, probably about ten recordings of it, so I listen to all of them, and um, from them, I gather my own interpretation of it.*
AY: *What do you think it is that you want to bring to those pieces, when you listen, what is it that you have to offer do you think?*
BG: *I was gonna say I want it natural.*
AY: *What do you mean by natural?*
BG: *If it doesn't sound convincing, I would say, you can do anything, but if it sounds convincing it gonna sound alright. So, I suppose, if you think you want your interpretation you just got to keep practicing it, err make the piece your own basically.*

Thus, a performer's own interpretation comes by listening other performers, and finding her own interpretation in relation to them; but not within the formalised representational method the score. It is her re-definition, her modification and interpretation leading to a new physical objective reality of the musical piece that the audience comes to witness during performance, and in the process, to partake into this new reality. Consider the following schema (Figure 31):

[164] See: Labrande, C., & Sturrock, D. (2011). *The Art of Piano: Great Pianists of the Twentieth Century.* Warner Music Vision

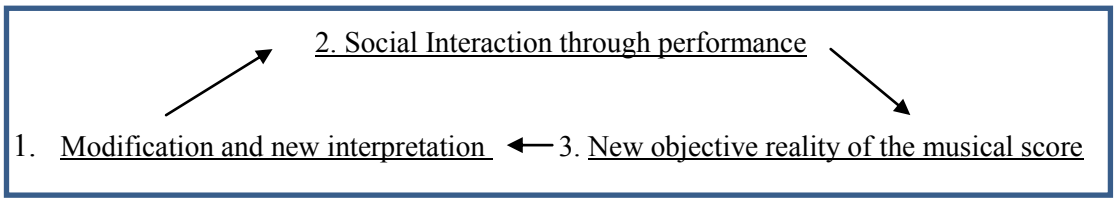


Figure 31: A circular notion of innovative interpretation of the musical piece by a performer

Some performers do not find satisfaction in complying with the suggested externalizations of music given to them by the composer, or the editor. The *S*core for them is the sound and not the printed page, portraying a relationship with the visual aspect of musical information which does not involve formalised directives in two-dimensional form. The performer's notion of *I* gradually starts to overcome the idealized composer's *I,* in this case represented by the score. Performers re-interpret the physical reality of the score, which, for them, represents a guideline and not a sacred text, inventing their own method of how music is to be visualised and delivered. A great believer in this non-compliance was Glenn Gould. Paul Myers said of him that when he saw notes on a printed page he looked on them as a fellow imparting a message to him. He did not believe in tradition and he did not necessarily see the necessity to play in a certain way, even, or particularly, the appropriate way. He played as he *felt*, occasionally making movements with his arms pertaining musical information as 'shape', directly in musical performance. Gould also felt uncomfortable with what he saw as a hierarchical division between artists and audience. He looked fondly back to the 18th century, when composers, performers and public looked at themselves as equal. Glenn Gould would say:

> I think that, that what happened at the 18th century when performers stopped being composers was a great disaster for music. I think that, to look at it today as an in-revertible move and say that this is not any longer correctible, that we cannot in fact get back to back to that glorious time when composers had a performer's insight into music and when an audience was consisted largely of people who performed and composed themselves, and we cannot get back to that, I think that is to say that music is finished. [165]

[165] Labrande, C., & Sturrock, D. (2011) Warner Music Vision

As these words reveal, when Gould was performing, he saw himself as a composer paying his tribute to fellow composers of the past. He thought that by re-interpreting his notion of *I* by believing that he belonged to a different musical tradition, he was trying to approach a complete *Me* state which is now lost in Western art music, which places performers on a stage, out of touch, yet there for everyone to see. By everyone, as Bourdieu would argue, it would mean anyone who could afford the concert ticket. The notion of performer / audience separation will feature even more prominently as we proceed with this investigation in Japan and Papua New Guinea, and also see the role of the score in this divide.

4.4. Japan – a parallel universe of musical existence

From my research journal: 1/6/2010: *I arrived very early at the theatre, so I went for lunch at a bento shop nearby (250 yen for a hot meal) […] after the show, I approached one of the seat ushers who looked European and asked him if I could speak to the Noh musicians on stage. He introduced himself as Diego and was as surprised to see me there as I was to see him.* [166] *He brought me aside to an elderly white lady who was gathering some remaining programme notes. I introduced myself to her, stated my reasons for meeting the musicians and asked for her help. Smiling slightly, she said: 'These things take time…' I have to admit I was rather disappointed. I had hoped it would be possible to get something more than a tense smile.*

Little did I know at the time that I was speaking to Rebecca Teele Ogamo, perhaps the only non-Japanese woman ever admitted into the Nohgaku Kyokai association as shihan (teacher), after 39 years of lessons with Michishge Udaka,[167] the only Japanese Noh Master willing to accept non-Japanese students (and as a result shunned from his peers), at the International Noh Institute. Rebecca would, in time and in her way, help me understand the impossibility of what I had requested of her at the Noh theatre. Had I been able to see the musicians myself, none of them would speak to me without proper introductions. I was a *gaikokujin*, a foreigner, seeking information about a tradition that they would not even give to their own students if they did not deem them worthy of it. At the time, of course, I was just slightly angry at Rebecca, while I should have been grateful to her for saving me from a very embarrassing situation. Accustomed to the fact that I was able to find willing participants easily enough at the university, I believed that the professional

[166] Diego Pellecchia was a fellow postgraduate student at the time from Royal Holloway, writing his PhD thesis on Noh theatre. We later became close friends – I owe him my sincere thanks for his help during my time in Kyoto.

[167] Michishige Udaka is a Noh sensei. In 1984 he founded the International Noh Institute (INI) and started giving courses to foreigners who wanted to continue their studies with him after having taken part in his intensive Noh course in the Traditional Theatre Training programme in Kyoto – Rebecca Teele being one of them. In 1991 the Japanese government designated him as representative of a National Intangible Cultural Asset.

performers in front of me would be of the same mind, for reasons I hope to clarify further on.

I arrived in Japan on May 20th, 2010. Through the assistance of Mr. and Mrs. Tarahara, the Consul General of Japan in Edinburgh, I established connections with Professor Takanori Fujita from the Kyoto City University of the Arts and with Professor Masayoshi Miura and Assistant Professor Aya Yoshikawa from the Tokyo Geijutsu Daigaku (Tokyo National University of Fine Arts). With the help of a Japanese student at the University of Edinburgh, I was able to translate a set of instructions for the quantitative research part and practised daily in speaking them out loud. As for the interviews themselves, I rarely faced any problem. The only difficulties that arose on occasion were due to cultural misunderstandings, such as not estimating the right amount of money as payment (*O-rei* – 'honorarium', as the Japanese call it) for an interview. A most important factor for the success of my fieldwork in Japan and Papua New Guinea proved to be some very basic knowledge of the language - Japanese and Tok-Pisin respectively; I managed to learn a number of words and set phrases which proved to be very helpful in establishing an emotional contact with the participants. Especially in Japan, even the most basic attempt to speak Japanese is rewarded with friendliness and good will. I found out the hard way that if I tried to initiate any conversation in English (particularly when asking for directions), my counterpart would a) respond coldly and rather angrily b) speak in Japanese only c) ignore me completely and walk away as if I were invisible. However, if I started the conversation in Japanese, regardless of poor language skills and *then* switched to English, most people / participants responded very warmly indeed. As for the rest, I followed Jaap Kunst's advice to the letter:

> …a little tactful handling, a lot of patience, a smile at the right moment, the feeling whether the subject's initial shyness is beginning to give way to some sort of confidence, and whether the psychological moment has arrived to show a little generosity; to observe when the participants are getting tired and in consequence a little irritable or easily distracted – in short, intuition and tact,

> one either has them or has them not, but they are indispensable if satisfactory results are to be obtained. [168]

Establishing contact with trained University students, teachers and performers was relatively easy through personal contacts. Gaining access however, to traditional Schools of music was more difficult. I was very fortunate to have Professor Takanori Fujita as an intermediary, as I very well realized that no traditional School would open its doors to a foreigner, apart perhaps from the International Noh Institute. In order to comprehend responses from the participants better, I thought it best to present traditional music in Japan from a historical point of view first.

4.5. History and the development of musical theory and style in Japan

I cannot provide here a concise history of musical practice in Japan. Apart from its being far beyond the purpose of this research, it has already been given very successfully by Malm [169] and others. [170] I will try to give a small historical introduction of how traditional Japanese music and its notational practices have come to exist in Japan with a particular interest in Noh theatre music (since my participants mainly belonged to that discipline) and the status that it has achieved from the moment of its introduction to the present day. By this small presentation, I hope to provide a concise setting as to which developments did occur, and the philosophy behind traditional Japanese Noh theatre music.

Japanese traditional music, in general, owes a great deal to China's Tang Dynasty (618-907 A.D.), for two reasons that still define Japanese musical culture. The first one is the adoption of the Chinese writing system (*Kanji*). One step towards any notational system is the existence of a linguistic system of script, and this import was no exception. Adopting Kanji led to the development of music notation for some

[168] Kunst, J. (1955). *Ethnomusicology*: *a study of its nature, its problems, methods and representative personalities to which is added a bibliography*. The Hague: Martinus Nijhoff, p.22.
[169] Malm, W. P. (1990). *Japanese music and musical instruments.* Rutland, Vt: Tuttle, and for an insider's view see Malm, W. P. (1986). *Six Hidden Views of Japanese Music,* Berkeley: University of California Press,
[170] A most concise book is Tokita, A., & Hughes, D. (2008). *Ashgate Research Companion to Japanese Music*. Ashgate.

musical genres during the Nara (710 - 794 A.D.) and Heian periods (794 – 1198 A.D.). The second reason was the introduction of Buddhism, which spread philosophical ideas and cultural elements from mainland Asia. Japan subsequently entered a period of 'relative voluntary isolation' from roughly the ninth until the nineteenth century, with one break during the sixteenth century where the shamisen (Japanese lute) and Christianity were introduced (Christianity left, the Shamisen stayed). Although trading with Dutch merchants was maintained, this seemed to have little detectable effect on the islands' musical culture. During this period of almost one thousand years, these two cultural influences (Buddhism and Chinese script / music) merged with existing musical norms to varying degrees and produced a multitude of styles and genres.

This small musical introduction brought to Japan ideas such as a fixed pitch dependent on extra-musical parameters, the idea of naming pitches and modes (which survives until today in some cases), and of course, musical notation and literacy. The musical influence from mainland China can most clearly be seen in Gagaku court music and Shōmyō Buddhist chants, which also included within them a strong tradition of music theory and musical notation. Their theory was based on ancient Chinese pitch, scales and modes, which have some similarities to Pythagorean pitch calculation. The lack of contact with China led to a simplification and reorganization of this theory, which in turn led to a development of local names for musical terminology, as well as new modes. When theory and performance practice clashed in Gagaku, usually theory had the upper hand as the written tradition of music was given a higher degree of respect (this is rather an exception, as all other Japanese genres are much more practice-led). Pre-mainland influenced music can be detected in Shinto festivals among local communities[171] and as the basic component of Noh theatre. Noh, however, is considered to be a most fine example of integrating the musical culture introduced from the mainland with local practices, drawing equally from Buddhist chants and the drum and flute ritual music, already present in Japan. Although, as we have seen, some genres of traditional Japanese music have a written theoretical component to them such as Gagaku, Shōmyō, Noh (whose theory

[171] Tokita, A., & Hughes, D. (2008). Ashgate.

derives from the previous two styles), Japanese folk music has no established written or oral history. The ritual aspect of music however, should not be underestimated – following my fieldwork experience and research analysis of bibliography sources on western and 'ethnic' music, it seems to me that one of the starting points of all music was found within a ritual context, which in turn moved through secularization towards a commercial plane. The switch from ritual to commerce can also be noted in the Noh tradition, as income from performances stopped being used for building / extending / maintaining temples but for paying actors. The appearance of other theatrical styles such as Kabuki and Bunraku in the seventeenth century, emerging audience preferences and competition between theatre companies led to further alterations and changes in style. The respective origins of the various genres of Japanese traditional music have led to the creation of diverse notational systems, theoretical treatises and modes of performance. [172,173] Attempts have been made to create parallels across styles mainly by Koizumi[174,175] and Lachmann.[176] By this model, the dynamics of tonal function in nearly all Japanese modes can be usefully understood in terms of three-note tetrachords: a pair of pitches, a perfect fourth apart, framing one intermediate, variable infixed pitch serving as an auxiliary. Such tetrachords may be linked to form larger scales. Any of the pitches separated by a fourth can serve as 'nuclear tones' (*kakuon*), or goals of melodic movement: there is no single 'tonic' as in the West. Apart from Gagaku, absolute pitch is of little significance in Japanese music. All Japanese modes share this underlying tetrachord-origin, which, although it is not unique to Japan, separates it from the Chinese pentatonic mode. It has to be noted though, that performing musicians do not talk about scales or modes, but of tunings. What theorists may have in mind might be completely different in practice: I have seen Noh musicians playing the Nohkan (flute for Noh theatre) bend pitch beyond the western chromatic scale at will.

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[172] Tokita, A. (1996). Mode and Scale, Modulation and Tuning in Japanese Shamisen Music: The Case of Kiyomoto Narrative. *Ethnomusicology* (Journal of the Society for Ethnomusicology, USA) 40,1, pp.1-33.

[173] Hughes, D. (2001). Japan I-IX. In: Sadie, S and Tyrrell, J, (eds.), *The New Grove Dictionary of Music and Musicians 2nd Edition.* Macmillan, pp. 815-90 at 818.

[174] Koizumi, F. (1958). *Research on Japanese traditional music (Nihon dento ongaku no kenkyu).* Ongaku no tomo-sha.

[175] Koizumi, F. (1977). Musical Scales in Japanese Music, in Koizumi et al. (Editors): Asian Music in an Asian perspective. Tokyo: Heibonsha.

[176] Lachmann, R. (1929). *Musik des Orients,* F. Hirt: Breslau.

As far as texture is concerned, the majority of Japanese traditional music is monophonic. Even in musical styles where heterophony occurs (sankyoku trio of koto, shamisen and shakuhachi), it is not harmonic but melodic since simultaneous variations of similar melodies are played; countermelodies appear that are not vertically coordinated with the main melody until the cadence. As for metre, if it is not free, wherever it is defined it is usually double (including 6/8). Triple metre does not exist.

4.6. Transmission

Before discussing notation, two related elements need to be understood: in traditional Japanese music (particularly in Noh), improvisation as a principle does not exist.[177] All flexible modes of playing encountered in performances, regardless if they are done intentionally or not, are considered to be either variations or stylistic interpretations, but not improvisations.
During an interview with NM, a Nohkan Master in Kyoto about the preference of interpretation over notation, I received the following response:

G.A: *As performers, how much power do you think that notation has over the musical piece you perform?*
NM: *Notation is just outline for [our] School. Notation is just scattered – the other part is transmitted orally. It is without writing, without guiding system. Some parts you can transfer, some parts not with musical notation.*
G.A: *When you perform, do you allow yourself any room for improvisation?*
NM: *It's not a good idea for Japanese [traditional] music. No improvisations. We have kind of improvisation, this is, we call it imagination. It is very separate, to co-ordinate time and play. But it is not improvisation.*

[177] Two exceptions are: a style of folk Shamisen performance called *tsugaru-jamisen* and one style of Shinto festival music in Tokyo, called *matsuri-bayashi*

The second element is that music is considered to be a living performance tradition, and not a theoretical practice. The transmission of music in Japan takes places in a process that has a very particular and defining role for the musician's future. It defines him as performer and person, as varying music schools have different performer philosophies behind them.

The Japanese describe it as denshō. This term defines the transmission of traditional arts from one generation to the next, most often through oral interaction or direct imitation of instrumental performance, rather than any 'Score'. In order for denshō to take place, it is very important to have a widely accepted and stable social structure. To return to the template of symbolic interaction, it would mean that in order for any sense of a physical objective reality to exist, the social reality should be well in place. There are three possibilities of transformative processes, according to musical genre:

a) Transmission within the family, as in the case for Gagaku. Unfortunately, during my fieldwork in Japan I gained very little access to performers who had been trained in this way
b) Transmission within a monastic order, as in the case of Shōmyō. I was indeed fortunate in witnessing an event taking place every ten years, on June 10th 2010[178]
c) Transmission within the Iemoto system, which deserves more extensive discussion.

The Iemoto is the current Master of a music school, leader of a specific tradition in musical performance of a specific instrument and genre. Unlike the other traditions, where the transmission is between professionals, the Iemoto system rose to accommodate amateur musicians in the Edo period (1600 – 1867 A.D.), when urban popular culture developed in a commercial way. The title is hereditary, and there can be only one Iemoto of a school at any particular time.[179] The literal meaning of the word is household head, or the master who controls the family business, implying

[178] Professor Fujita arranged for me to go to Enryakuji Temple on Mt. Hiei, northwest of Kyoto. The temple was built by priest Saicho in the 8th century A.D. as the centre of the Tendai sect of Buddhism. Every ten years the monks of Enryakuji gather at a shrine located in the eastern area called the Daiko-do (Great Lecture Hall) reciting the six planes of existence that a soul may be reborn in the Desire realm. The Great Lecture Hall is where monks receive their modern-day training and debates on Buddhism are heard.

[179] This often leads to divisions within schools, creating new houses of traditions. See Read, C., & Locke, D. (1983). An analysis of the Yamada-ryū sōkyoku iemoto system. *Hōgaku* 1 pp. 20-52.

either a real or (especially nowadays) proposed family relationship, similar to the real family relationships found in the Gagagu tradition.

The Iemoto system is based on the supreme hierarchy and authority of the Head of the school, who is the current master of secret traditions inherited from his predecessor. Students in this discipline hope to prove trustworthy of these secrets in order to obtain a teaching license from the Head of the school, or even get a certificate stating that they have achieved a specific level of mastery in the particular musical style. It is quite common for students to pay tuition in order to perform together with their Master in shows, rather than the other way around. They owe great loyalty to their respective School, and are not supposed to change schools or teachers, as their affiliations amount to family relationships: a person in most cases would not willingly replace his father. When the traditional arts suffered a decline after the Meiji restoration and the beginning of the Meiji period (1868 – 1912 A.D.), and the promotion of western music and culture through the public school system from 1895 onwards, the Iemoto system played a significant role in preserving traditional music. Despite the influence of Christian missionaries (as was the case of Papua New Guinea presented later on in 4.13 and 4.14), western musicology and notation, the existing musical tradition was not eradicated completely, thanks to the efforts of these schools which stressed the importance of cultural context and the musical tradition of the past.

I witnessed the power of the system at work in two of my interviews in Japan. One of my participants was Mori, a Nohkan player, student of NM who was the Head of his school. I point out that I interviewed Mori at the University, and not in his music school. During one interview, he told me that his Master, NM, stopped pursuing a career in French literature in Paris when the former Master of the school made him his heir, and gave him the title of Iemoto. He returned immediately to Japan to take over the school.

In another interview, Mori, Professor Fujita and I, while discussing the possibility of performing Japanese music on Western instruments, had a debate about melodic contour.

G.A: *Do you think you can play Japanese music with western instruments?*
(Mori picks out a western flute from his bag).
G.A: *How many instruments have you got in there?!* (This was the fourth flute in a row Mori had pulled out – all laugh. Mori picked up the western flute and played *Sakura,* a very famous piece without error from Japanese score.
G.A: *If you did this, if you tried this with a Noh piece in a Noh performance* [perform with a western type instrument], *would the audience be satisfied?*
Mori: *You NEVER try this, anywhere!*
Fujita (to Mori)**:** *You try this in class next week* (says jokingly, both laugh).
Mori: *Never!*

Slowly, I hope the impossibility of what I had asked from Rebecca at the beginning of the section on Japan may become apparent: I had asked for an interview with a Head of the school and his pupils, people who had dedicated their entire lives in maintaining a tradition which almost became extinct, people who safeguarded the secrets of their performance school as sacred from prying eyes, who fought against the westernization of their country through their discipline and diligence.[180]
It is apparent that the circular notion of symbolic interaction did not apply for Japanese traditional music before it was made accessible to a larger population through the Universities, since modification and (new) interpretation were nearly non-existent. The largest weight had been placed on maintaining the status quo of the current physical objective reality, which was constantly confirmed and re-established through un-changing social interaction inside the family, the temple or the Iemoto system of teaching; it was a system frozen in time, not permitting modern sociological changes to affect the circular notion of symbolic interaction. Only now, through the existence of a new generation of performers / musicians who are also familiar with WSN and other forms of music the physical objective reality of Japanese traditional music may be modified / re-interpreted, and at the same time

[180] I have to note here that nowadays universities and national theatres offer programmes that train students for Noh, Kabuki, Bunraku and other traditional musical styles, creating a new generation of musicians outside the Iemoto system who are also familiar with WSN and western musicology. The study of a traditional musical instrument has become part of the school music curriculum, together with the study of western music and notation. Although this has a positive impact on the people involved in traditional music, I believe it will eventually come to replace the Iemoto system.

promoted beyond its former borders. Although Michishge Udaka and his International Noh Institute are not deemed acceptable by the traditionalists who accuse him of ruining the profession, I strongly believe that his intentions of re-defining the physical objective reality by permitting others (foreigners) into the circle of symbolic interaction, by granting them a voice in the social interaction stage, have brought him to a situation in which he himself is, in fact, modifying, re-interpreting and defining the place which the old teaching tradition of Japanese Noh theatre has in the 21st century.

4.7. Notation in Japan

Where does the written aspect of music stand in traditional Japanese music? I first need to clarify something: Uniform musical notation does not exist in Japan, to the extent that there are no two Japanese instruments that use the same system. On the contrary, it is very possible that more than three systems may exist for the same instrument, which may again have as many variations in style as the number of music schools that teach them. The types of these notation systems also vary: apart from tablature which is the most common for string instruments, we may have pitch notation (analogue), neumatic, or oral mnemonics written next to the text. The key reason behind this is the belief that secrets of the trade should remain within the family / monastery / school under the Iemoto's supervision. It was only the most worthy students of the school that were allowed to see and learn the written treatises passed down through generations of musical tradition. A more pragmatic reason for this secrecy was that many teachers tried to limit the transmission of knowledge to the wider circle of students, and the musically inclined population in general. By being able to read and comprehend notation, students would be able to learn the repertory without paying fees to an Iemoto. Thus, gradually, not only did notation for most styles of music become shrouded in secrecy, it also started to become very difficult to be deciphered, without the assistance of a Master, and very diverse as each school would develop its own variations of a system. It was relatively common

for students to try to 'steal' the art (*gei o nusumu*), by attempting to learn performance techniques and the repertoire from someone by listening or watching, as notations were rarely permitted during lessons and were even more rare to be seen during performance. The musical output of one of the most famous theorists of Noh music (Zeami, 1364 – 1443 A.D.) was unknown beyond his school until the end of the nineteenth century. The interactional (social) setting of traditional music as an active participant in the community's musical activities would, in the case of folk music, not include a score. In the case of 'art' music (as in Noh) the teaching methodology was such that the score was presented to the student long after he had mastered the repertory, and was deemed worthy of seeing the 'original', as it had been put down decades or centuries ago. If we combine this with the fact that nearly all scores of instrumental notations contain oral components (with some being just oral mnemonics, as in the case of the first notations of the Nohkan as we will see below) we become to realize the necessity of the Master's presence. The variety of Japanese notation systems may be seen in the beginning of the interview with Mori, NM's student of the Nohkan:

Mori reached into his bag and pulled three flutes of different lengths (a ryuteki, a nohkan and a shinobue).
Mori: *You have any idea about the difference between these flutes?*
G.A: *No idea.*
Mori (Fujita translating): *This one is (ry)Uteki for Gagaku, this is oldest Japanese form of music. It is used to accompany very old popular forms.*
G.A: *Are there different notations for each flute?*
Mori: *Yes, here* (Mori takes a pile of books from his bag and lays them all out. I see notation for the Nohkan and for the shinobue, and a third which I do not recognise. All these notations move vertically along the page).
G.A: *What about his one?* (I show the Nohkan notation).
Fujita: *This is Noh flute. Shoga is notation, Japanese kana. Gagaku notation also uses kana, and uses fingerings, but not Noh.* [In] *Noh,* [the] *performer remembers fingerings. The line is beat, not box.* (Mori plays a tune).
Fujita: (Picks shinobue). *This flute and notation is for kabuki theatre, the number shows fingering. This number* [is] *used for notation, like tablature. Those notations*

(points at Nohkan score and shinobue score) *you can sing by your mouth. Not this one though. The note is fingering, not note* (Here Prof. Fujita means that the notation is executive, not alphabetic or analogue). *Box shows two beats.*
Mori: *In comparison* (he uses the word combination) *all are different from western flute. Holes in instrument are different* (plays a series of ascending notes).
Fujita: *Part of music can be transcribed from both systems* (Japanese to English and opposite), *and it depend on system. This is tablature, so it's easier* (points on shinobue notation – he means executive). *This* (points at notation from Nohkan) *is notation for music of Noh.* [In] *This notation, each syllable do*[es] *not signify definite pitches, as* [I] *told you, it just show*[s] *melodic contour, by series of syllables, so it's very difficult to transcribe…Bach for instance*.

Such systems which deploy syllables for the transmission of music are collectively called (*kuchi-*) *shōga*. Masters teach new students based on this method first: recitation of syllables without going near a score, or a musical instrument.[181] The music is first learnt syllabically, then performed on the musical instrument and then perhaps the score might be consulted. This method seems to achieve surprisingly good results in terms of mnemonics. What's more, some of the syllables are specific patterns that are fixed on specific sounds. For instance, the combinations of the syllables *O-hia* indicate a rising second. The first notations of the Nohkan, the flute used in Noh performances, were reproductions of syllables mimicking sounds. Even today, beginners start by singing sound-syllables before looking at a score, or even playing the instrument. Recently Nohkan notation started to include fingerings or metric indications, but no pitch indicators.

G.A: *I've got an idea. Let me see if I can find it. Ok. Here we go.* (I play Bach's orchestral suite no. 3 in D Major, BWV 1068 on the mp3 player). *How would you transcribe this here? What do you think would you capture? And what would be lost in translation, from this to this* (I point from mp3 to Noh flute score) *and from Noh music to a western score?*

[181] Hughes, D, W. (2000). No Nonsense: The Logic and Power of Acoustic-Iconic Mnemonic Systems. *British Journal of Ethnomusicology,* Vol. 9, No. 2, pp. 93-120.

(Both think long and hard, I try to rephrase).*You told me that this* (I point at Noh flute score) *describes melodic contour. How would you describe this piece, which is based on pitch, into melodic contour?*

(**Mori** jokes with Fujita saying in Japanese): *Sore wa (f)ukanōdes(u)* (= This is impossible)

Fujita (jokingly): *Ohiaaaa!* (Screaming other Noh syllabic notation, both laugh). *With this very, hard, confusing, because we never imagine this kind of transcription. It is unimaginable. Of course it shows contour. For instance, this* (points at Noh flute score) *is strongly fixed to the Nohkan melody and combined to music timbre. This music*[al score] *is combined with western culture. Because of different timbre, it is very difficult for us. Maybe it cannot be described with this system.*

G.A: *Can you play the Sakura melody with another instrument* (I point at the Nohkan)?

Fujita: *But the Noh flute is not a melodic instrument. It is used as a timbre instrument. It* [is] *always solo, not ensemble with other instruments. It is describing the atmosphere. If there is any co-ordination it is with the tempo and the mood. If he* (points at Mori) *is out of the mood, other players will say 'You are too fast, you are accompanying a woman and you play like it's a young warrior.' Co-ordination is on that level. The melodic harmony between parts is not important. The Noh flute player is rather on timbre rather than melody.*

(Mori tries to play Bach's air on Kabuki flute)

G.A: *Close enough*.

Mori picks the Nohkan, with which he tries to play the same piece. After some shrill whistling, he just shrugs his shoulders, and both he and Fujita laugh hard.

G.A: *It's fascinating!*

Mori: *When he hear, notation is syllable. We know syllable is always this.* (Meaning syllabic mnemonic notation, as described above).

G.A: *Do the* [syllabic] *pieces remain the same?*

Fujita: *Large skeleton is the same. Now* [it's] *shorter, much quicker. But structure is same. Each syllable is added with embellishment.*

G.A: *Does this notation preserve the same music?*

Fujita (frowning, serious)**:** *We believe yes. We believe this notation shows music from 17th century, but there is no evidence. Each school has own notation, so from starting point there must exist similar. If you trace back four hundred years ago, you see in actual performance we don't know, there are some changes in history*… […].

This is another example of what Bruno Nettl referred to as untranslatable cultures,[182] which also prove/reveal the role of notation to be supplementary, and highly specified and specialized to the task in hand. Also, we see the relative ease in which performers deal with the written aspect of music: musicians, through the oral transmission system, are trained to see music without a notational perspective and therefore 'through the bars' of the notation. Teachers rarely use it (notation) as their 'safe haven' anyway, as there is no literal reading of it: just the school's version of a notated piece. Central emphasis is put on the methodology of oral musical transmission. In order for the reader to fully comprehend the complexity of Japanese notation, I will present two other examples of vocal scores: the first is Buddhist Chant notation and the second are notations used in Noh music.

4.7.1 Shōmyō Buddhist Chant Notation[183]

Buddhist chants basically consist of a text set to melody, recited by a chorus of monks. Shōmyō originates from the word Sabda-Vidya (from Sanskrit) meaning 'the study of language'. In Japan, three types of chants exist: Sanskrit Chants, originating from India, Chinese chants and Japanese chants. All three types are still used today. Regarding the differing sects of Buddhism, the Tendai sect which I visited in Mt. Hiei outside Tokyo, and whose scores I will explain presently, use musical scores different from the ones that the Shingon sect has in use. Both sects also vary in

[182] Bruno Nettl repeats throughout his entire work. Indicative, the reader may wish to read Nettl, B. (1956). *Music in primitive culture.* Cambridge, Mass.; London: Harvard University Press, 1997 edition.

[183] Most of the information presented here was handed to me by Professor Fujita Takanori. Without his help I would not have been able to present these case studies on Shōmyō and Noh.

performance style (if we can use the word performance), as Tendai is seen as more elegant and feminine, while Shingon is perceived as more dynamic and masculine.

Regarding the scores (*go-on-hakase*), they began originally as neumatic notation dating as far back as the 8th century A.D, and appear to be quite similar to Western neumatic script, with two notable differences: i) as the linguistic text ran vertically along the page and from right to left, *hakase* was placed right next to the text, not above or below it, and ii) *hakase* usually had a right-to-left directionality.

The basic notation system divided a range from C3 till A5, with five notes to each octave, with the first three notes and the last of the system rarely used in practice. It consisted of short lines that indicated different pitches according to the angle that they were tipped as seen below in Figure 32:

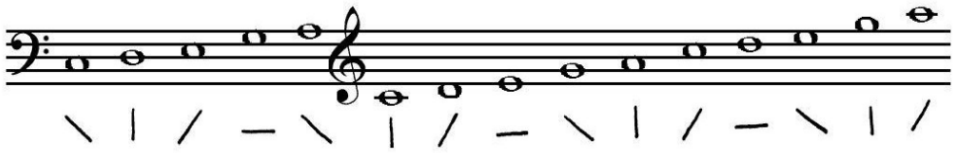

Figure 32: Buddhist Chant notation symbols with their WSN counterpart

According to Kaufmann (1967),[184] the angle of the tips may have its origin in the simple Vedic mudras which came to Japan, gradually evolving into Shōmyō notation. Although some of the symbols are very similar, the music of the chants is very diatonic in nature, so there is little confusion about which pitch is suggested. The nature of the system makes it apparent that it is particularly useful only when the alterations of pitch remain minimal for each word – this much is obvious, for when vocal lines became longer, in order to incorporate more changes in pitch, the system becomes quite difficult to use.

As the notation system developed, one of the most important modifications that took place was that the notation always faced away from the text. Being written on its left side it would develop in a right-to-left fashion. At the same time, the notation reached a high level of complexity: as different sects of Buddhism emerged, each would develop their own variation of the original system, to the point that the

[184] Kaufmann, W. (1967). The Mudrās in Sāmavedic Chant and Their Probable Relationship to the Go-on Hakase of the Shōmyō of Japan, Ethnomusicology Vol. 11 No .2, p 161-169.

notation would be undecipherable without the assistance of a Master and without lots of practice. An example of a Tendai sect version of notation called *meyasu* (literally: 'easy on the eyes', as the system expanded rather in length to avoid cramming information on limited space). It depicted the unfolding of the melodic line in a two-dimensional way (Figure 33):

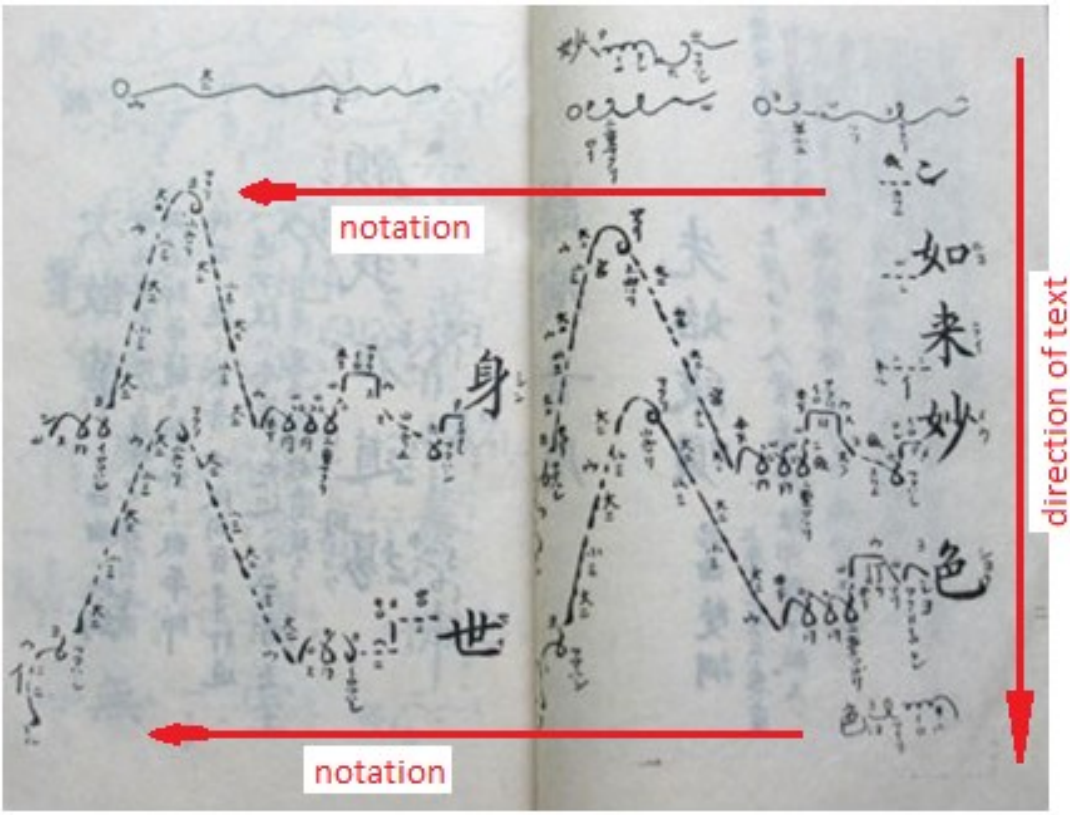

Figure 33: Buddhist chant notation from the Tendai sect

In performance, there is a Head Priest who will lead the chant by reciting the opening phrase, and a chorus of monks who join in gradually. Synchronicity is achieved by following the head priest and by listening to each other. It is not considered fundamental to stay pitch perfect during a 'performance'. Pitch in Tendai chants is usually established by a tuning flute to find the starting tone (though I have not seen it being used when I witnessed their religious service). Each chant usually has a set tempo, which is also learnt through practice. Tone and expression are very much dependent on the setting and theme of the chant in question.

4.7.2. Noh Vocal Music

Noh literally means 'skill'. It is an all-embracing art form that includes music, acting, dancing and narration, in what would be described in the West as a gestalt approach to musical theatre. It has its origins in the 14th century, and evolved from earlier dance, musical (especially Gagaku music and Shinto chants) and theatrical forms. As our prime focus is the notational aspect, I will mainly discuss the musical and notational part of the Noh tradition. Below (Figure 34) is an image of the Noh stage, which will assist the reader in positioning the musicians in relation to each other and the audience. Noh is as much a visual art, as a musical one.

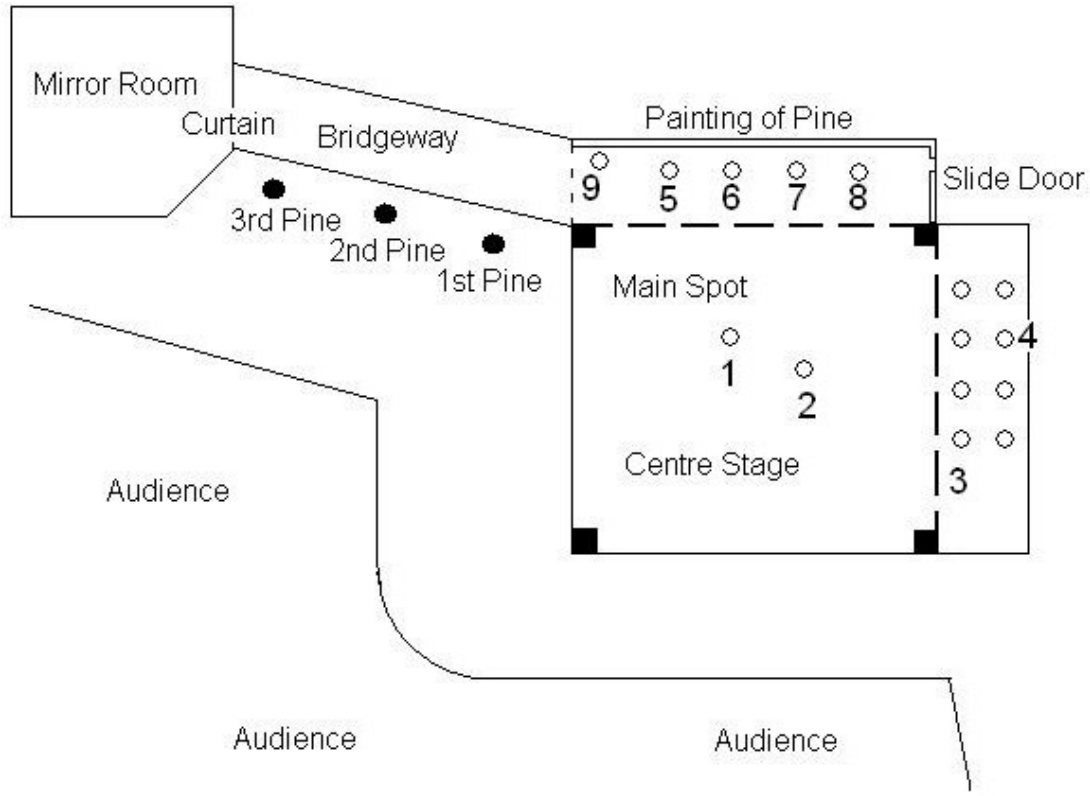

Figure 34: The Noh stage

For the music of Noh the term often used is *Go-sei*, (Five Voices), referring to the four instruments used and the signing by the actor or actors (numbers 1 & 2 in Figure 35 above) and a chorus (*jiutai*) consisting of usually eight singers (number 3). The instrumental ensemble (Hayashi) consists of three percussionists and one flutist (a setting also found in the Kabuki theatre, as well as various regional festivals). The

Hayashi Noh consists of a Nohkan / flute (number 8), a Ko-tsuzumi / shoulder drum (number 7), an O-tsuzumi / side drum (number 6) and a taiko / floor drum (number 5).

The importance of this quartet in the development of a Noh play is such that we can consider the whole practice as a dance narrative deploying theater techniques and using music as an accompanying background. The actors' movements are determined almost entirely by the rhythm and tempo set by the musicians on stage. Seating is also pre-determined. The *Hayashi* sit in line facing the audience, while the chorus (entering from a slide door at the back) sits in two lines of four facing the stage, and the actors enter from a bridge-way on the left of the stage. There is also a stagehand assisting the musicians and the actors on stage. Noh singing is a derivative of Buddhist chant. In a Noh performance the utai (song) is done by the actors and the chorus. The tempo of the singing is controlled by the chorus leader (*jigashira*), usually seated in the back row (number 4). There is no conductor, and since there is no absolute pitch either, the *jigashira* is responsible for setting the pitch, duration and tempo of the singing by directing the chorus, playing a key role in the overall stage direction and performance of any given play – as all performers train separately, originate from different schools and meet for only one rehearsal prior to the actual performance. As for the notation, it is separated between the vocal part and the instrumental part. I will focus on the vocal part used by the main actors and the chorus, called Utaibon (lyrics & notes). The notation is placed on the right side of the text, as in the following example (Figure 35):

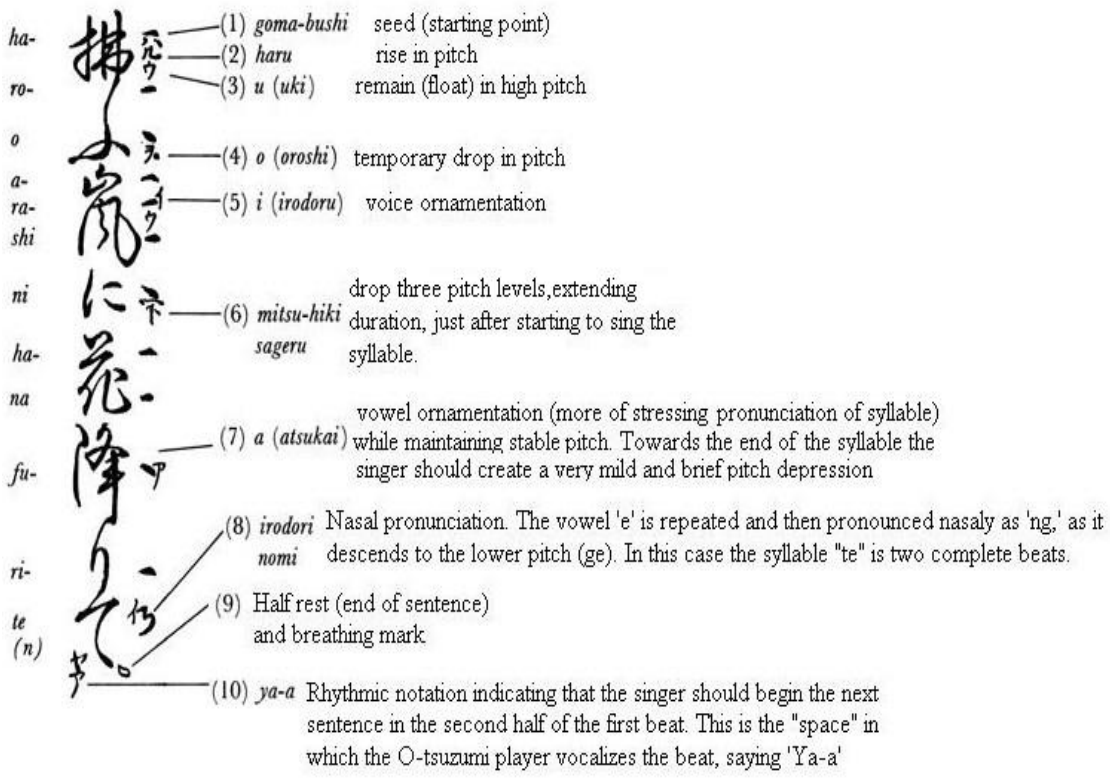

Figure 35: Noh vocal notation

This example is a line of text from the play *Hagoromo*. This line of text (*Haro-o arashi ni/o ha-na furiten* – 'In a severe storm, flowers fall') can be displayed approximately in the following notation (Figure 36):

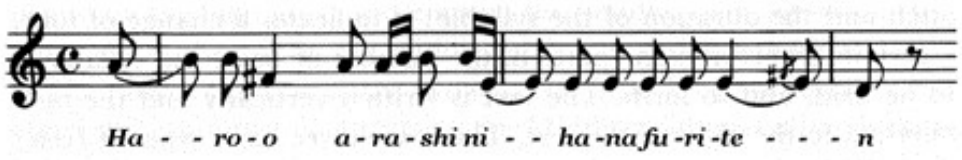

Figure 36: Transcription of Noh vocal notation

Let us attempt to analyse this score. Each symbolic musical unit (*fushi*) is a statement about both the pitch and the duration of the syllable placed on the right of the text, running vertically along the page. Each symbol may indicate changes of tone, patterns of ornamentation, number of beats during the syllable they apply to among others. There are three basic types of *fushi* symbols: i) direct marks (*sugu*), looking similar to sesame seeds, that indicate pitch variation ii) drag marks (*hiki*), indicating

that a syllable is to be sustained without pitch alterations and iii) spin marks (*mawashi*) that indicate a change in pitch while in the same syllable. In principle and at a basic level, these marks are applied one to one syllable, while further marks are then added to these to indicate changes in the basic sounds. Two specific types of *fushi* worth mentioning are the *hashiri* 'running' mark, indicated by a line drawn in the middle of a *sugu* to signal that the tempo should be twice as fast and the *yuri* (vibrato or trill) mark, always used in a final syllable. The *yuri* can further be separated in the *mitsu-yuri* ('triple' vibrato) *have-yuri* (mean vibrato) and *hon-yuri* (basic vibrato or real), or a combination of these. The melodic proponent of the singing part can be described first by specifying the song in terms of mode and text, and then indicating the combination of basic melodic units, signifying ornamental or pitch alterations. The rhythmic and melodic structure of the pieces is not free, but set to specific rules: pitches are combined by a set of directions according to the aesthetic demands of the music. As for the rhythmic structure, it is set in the eight-beat phrase system prevailing throughout the entire Noh repertoire. This rhythmic structure is kept in a performance by the percussionists, who also use vocal indicators called *kakegoe.* These indicators (syllables such as Ho, Yo and Yia-a) serve to mark time between beats in an otherwise very flexible rhythm, with a characteristic orientation of moving away from the first beat. This has the effect that the entire music section seems to be off-balance. Keeping in mind that most Noh schools deploy their own notational symbols that vary greatly in the level of detail, it is quite obvious that in the Ieomoto system, without a Master the notation does not serve primarily a teaching purpose, but rather an archival one and for that accessible to very few people deemed worthy of reading / seeing it. However, when trying to articulate music on paper, a Master may spend quite a lot of time thinking about what to put on the score. This is due to the social implications that notation / 'improvisation' have: Japanese traditional performers of Noh regard that every aspect of a musical work is painstakingly detailed faithfully in its performance. This detail originates from a disciplined methodology in tuition as we have seen above, where order and loyalty to the teacher / Master prevails. Japanese scores may be seen to allow a lot of room for improvisation in the Western musician's eyes, as no specific pitch is mentioned; however, in the native performer's eyes, there is little

room. It would be considered as an insult to the Master if his student were to alter his performance, and in extent an insult to the original composer of the work.

4.7.3 A case study with IK

Observe the interview below with a Tsuzumi Master of Noh, IK, with Professor Fujita acting as translator. During Part II of the experiment (forced choice design), in which IK is called to select images associating drum patterns with auditory stimuli in any way that he wishes, he insisted on adding various changes before handing back his paper:

Fujita: *He still does not know what to choose, vertical or horizontal.*
G.A (to IK)**:** *Just choose what you want.*
Fujita (smiling, to me in low voice): *Yes of course, but he's a specialist.*
G.A (To Fujita)**:** *That's what makes it more interesting.* (To IK): *I have seen that you took more time to decide about the drumming patterns. If you think you should change something from there, feel free to change it.*

IK looks at me, turns to Part I, where he represented the drum patterns himself on paper (free-representation of drum stimuli) and proceeds to make changes there. While doing so, he speaks to himself in a low voice, and seems to be counting. He goes back to Part 2.2 and reviews his answers.

Fujita (translating IK)**:** *for him the length and the size is very important, the proportions. For him the space between the sign is not important. He wanted to represent changes by difference in size, so he doesn't know what to do.*
G.A: *What do you mean?*

Fujita (translating IK)**:** *Music of Noh is always eight- beat cycle. He's always analysing according to eight-beat pattern. This is not eight beat. Usually he can transcribe eight beat, but now no. He says he cannot represent the sounds.*

(The rhythmic pattern in Noh theatre is invariably in eight beats, and starts from the second beat. While creating the musical stimuli, I did not believe that this would affect the participants in the majority. IK was the only one to note this 'irregularity' to actual Noh music).

G.A: *At least for the sounds, the first one, how would you represent this is Noh theatre?*

(I play for him the very first drum sample from the mp3 player. IK drew in response three circles vertically, connected by lines, next to the images I provided (Figure 37):

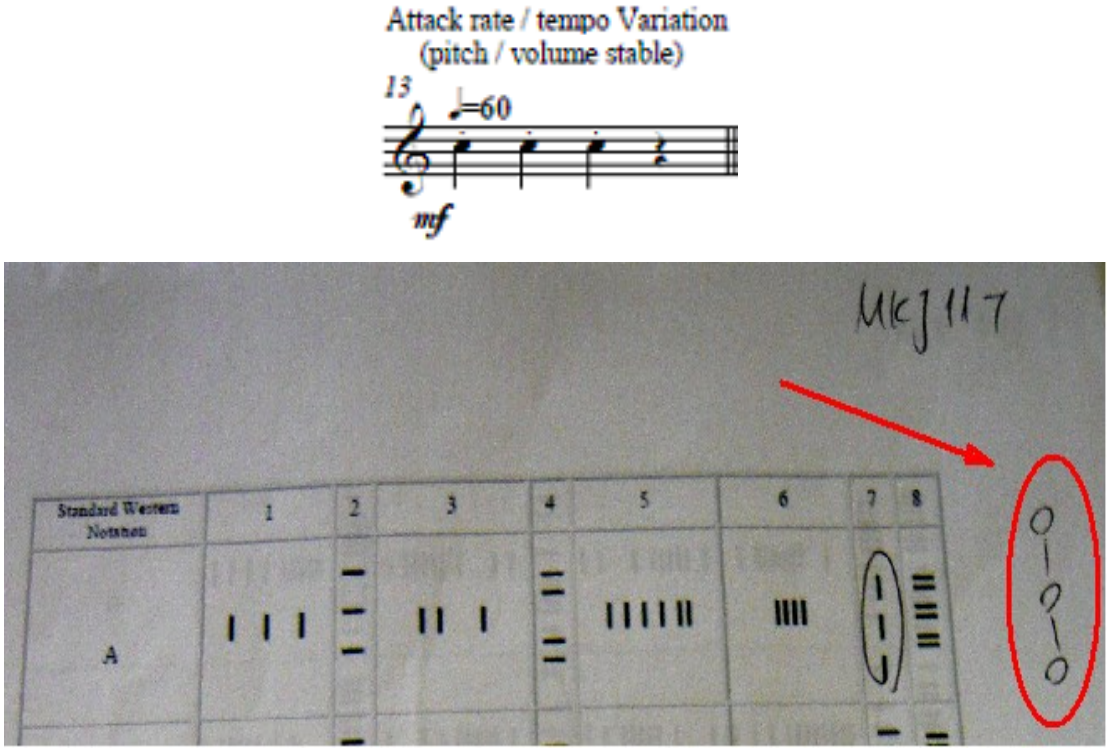

Figure 37: First drum sample and IK's response to drum pattern

G.A: *When you were 'writing' the sounds, for the drum patterns you chose to represent time going as a line horizontally, but here you're doing it vertically. Do you think there is any difference? Do you think a Noh performer would understand this if he was reading it horizontally?*

Fujita (translating IK)**:** *As a contemporary person it is easier to write left to right. He says it is rather rational to write horizontally. But he also insists that even he knows Noh notation moves vertically, when he is in a hurry, he writes horizontally. But when he has time, he transfers it to a vertical pattern.*

Below in Figure 38, IK's own responses may be seen in relation to Part 1.3 (drum stimuli). As it is easily observed, his responses represent time horizontally.

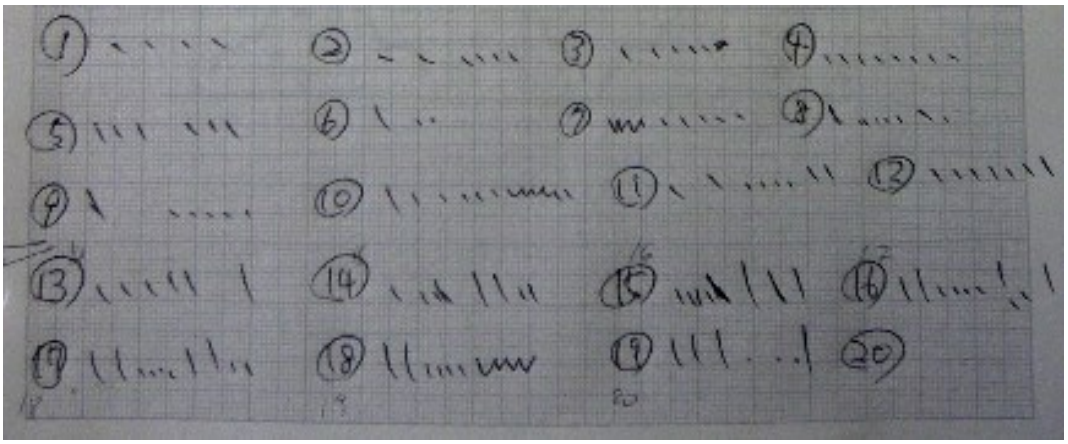

Figure 38: IK's responses to the drum stimuli. All responses represent time horizontally

Japanese music is highly context-dependent. The perspective of music as a strict discipline within traditional arts such as Noh theatre has given Iemoto masters a rationale for how music should be represented, even if it is not what they would do instinctively. NM (Mori's teacher) also insisted on 'correcting' his responses for Part II of the experimental procedure, as seen below in Figure 39, even though he provided responses for the drum stimuli with time represented on the horizontal axis:

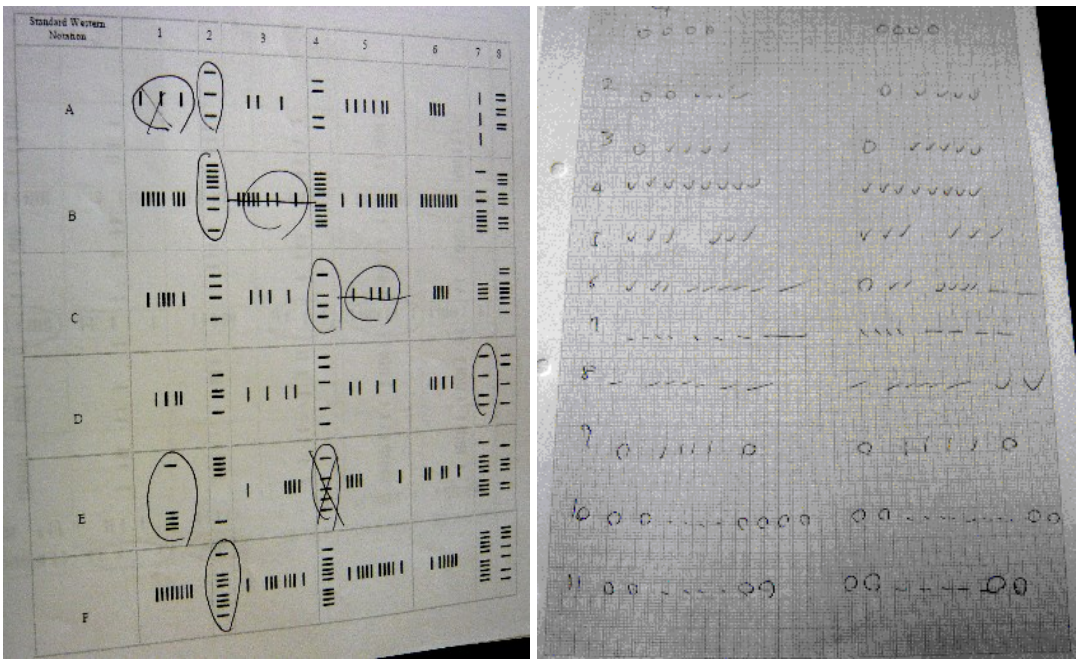

Figure 39: NM's responses for the forced choice experiment, and his own responses given earlier

As we have seen, one of the largest changes in the history of Japan was the 'opening up' to the West. Although the Masters of Iemoto schools are sometimes seen as living national treasures and are given titles by the Japanese state for their contribution to local culture, when left to their own devices they seem to present a 'westernized' view of transcribing music on paper. When given time, they attempt to represent elements that they deem to be more suitable and more 'authentic'. Younger students from the Universities of Kyoto and Tokyo rarely demonstrate such tendencies ('correcting' scores, or representing time vertically). Among the few participants who consistently represented auditory stimuli with a vertical description of time for Parts 1.1 and 1.3 was a Shamisen teacher from the Kyoto City University of Arts. Unfortunately, he did not take part in the interview as he was pressed for time, and did not respond to my calls while I was in Kyoto. His responses may be seen below in Figure 40:

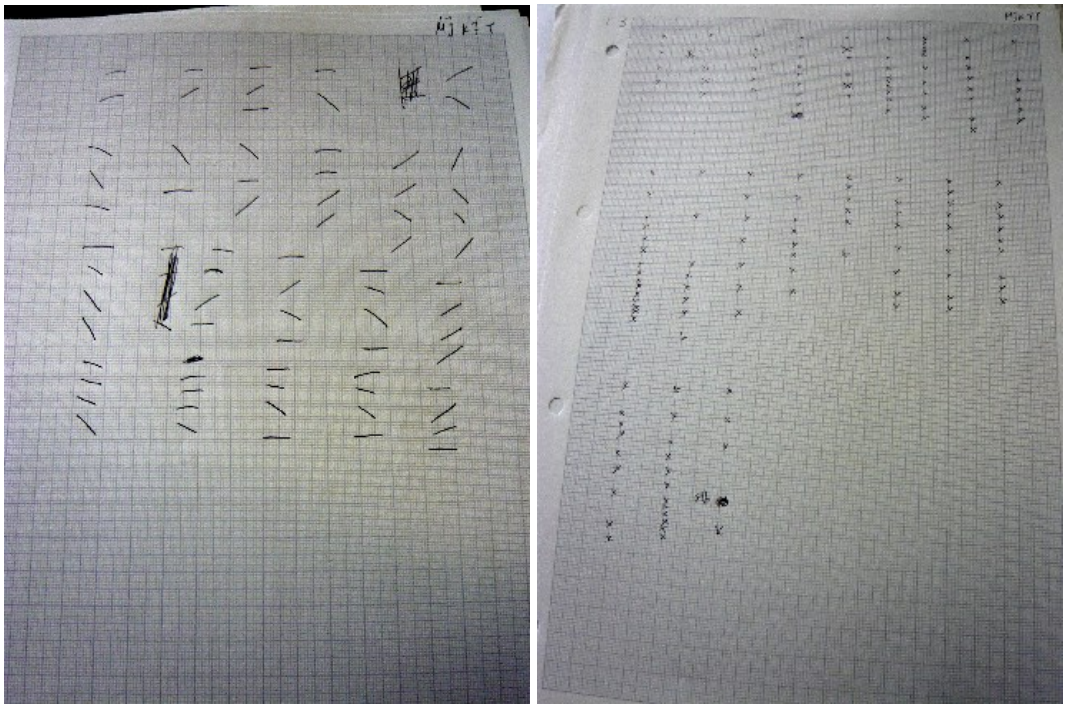

Figure 40: Vertical representation of pitch and attack rate

It seems that the late nineteenth and early twentieth century modernization changed Japan and the way people put their cognitive skills into action forever. While I was expecting to find more examples of vertical time representation as suggested by Boroditsky's experiments, I did not find solid data supporting this assumption. The minority of participants that demonstrated such behaviour were part of a very specialized guild of Music experts, who knowingly try to seclude themselves from Western musical influences as much as possible.

In the symbolic interaction model that I established at the beginning of the chapter, the circular notion linking the physical objective reality, being re-interpreted through social interaction is now split into three groups: i) those who have moved away from traditional music completely ii) those who have opened up their social interactive circle, through acceptance of foreign students and influences, thus further modifying and re-interpreting traditional music and iii) those who refuse any deviation / modification in their physical objective reality, while doing everything in their power to maintain their social interaction at its current state. From the examples above, I have witnessed that when experts of traditional music are pressed for time, they opt for a left-to-right horizontal representation, which leads to the thought that music

may be universally perceived of moving in a horizontal, left to right analogue manner. However, in their effort to reject change, they 'correct' their responses by providing answers that they think best fit their social interactive circle. Therefore, we see that although participants may indeed show tendencies that could be described as similar to the British pilot group, it is culture which tends to intervene and replicate the sociological normality among users of these highly specialized music traditions. Perhaps this may also be one of the reasons why I could not interview students when their teacher was present; they would not reply before their teacher had replied first, and then they would agree with what he said. For this reason, I stopped conducting interviews with mixed student / teacher groups.

Whether the tendency to represent music on paper in a left-to-right horizontal manner is innate or stems from the expansion of Western culture, will be hopefully revealed in the following analysis of responses by the next participant groups from Papua New Guinea.

4.8. Papua New Guinea: Expect the Unexpected

I prepared as much as possible before I arrived in Papua New Guinea. I attended an Ethnographic fieldwork course at the University of Edinburgh, I prepared and tested my recording equipment, bought back-up batteries and a solar charger, I photocopied enough papers of stimuli for Part 2 and bought as much graph paper as I could carry from Japan. I even backed up files in a 3.5 inch floppy disk just in case I needed extra copies of anything and computers did not have USB ports. Despite all this preparation, nothing could make me ready for the cultural shock at my arrival in Port Moresby.

I had been very lucky in receiving much needed support from the University of Papua New Guinea. Before I arrived, I had contacted the Arts & Humanities department and spoke to Professor Motsy David on the phone, who would in time become a very close friend and associate. Through him, I got in touch with Professor Daniel Jonerhaggt, the Head of the Music department who in turn introduced me to Dr. Don Niles, one of the most important figures in Papua New Guinean ethnomusicology.

I initially intended to travel to a region of Papua New Guinea where I would be able to locate participants belonging to one tribe who would easily be separated in two groups, similar to Japan: those familiar with WSN, western music and literate, and those who were unfamiliar with WSN, western music and were non-literate. The problem was that, on my arrival and after discussion with Profs. Motsy, Jonerhaggt and Dr. Niles, I realized that:

i) WSN is not the main means of musical communication in Papua New Guinea, even among professional musicians in string-bands and bands which use western musical instruments. Those familiar with notation would most likely have had university education, therefore highly literate and familiar with western culture as well.

ii) My only chances of locating participants familiar with WSN in large numbers (i.e. more than twenty gathered at the same place) would be in Port Moresby, or a city with a University. Papua New Guinea has five Universities, of which music is taught

as a subject in only two of them: the University of Papua New Guinea and the University of Goroka.

iii) If I was able to locate non-literate participants those would be in rural areas and would be over forty years old - in the last few years Christian missionaries had reached even the most remote regions of the islands, bringing organised religion and with it schools and western civilization and technology (such as radios and mobile phones).

iv) It would be practically impossible to locate all types of participants from one cultural group. Papua New Guinea is home for 800+ distinct tribes in a total population of approximately six million people, which means that there are on average seven and a half thousand people per tribe.

v) People would be reluctant to talk to me if I went unannounced with translators outside their villages or tribes, and would not be co-operative especially when it came to writing down anything on paper. There have been numerous cases were villagers turned hostile due to miscommunications, especially when they thought that the 'visitor' was a company representative.[185]

Therefore, I had to revise my course of fieldwork action. I developed a new methodology that took into account the advice and tips given to me by my local advisors, as I understood that the research part taking place in P.N.G. would rely solely on the collaboration, help and connections of Mr. Motsy and Mr. Jonerhaggt. They proposed that in exchange for their help in locating participants, I would have

[185] I feel this needs a bit more explanation: although my initial plan was to go to the Southern highland province to the Huli tribe, I was actively discouraged by all my local P.N.G. contacts to go there, as there was an armed conflict going on: the Australian branch of ExxonMobil had struck a ten billion US dollar deal with the Papua New Guinean government for mining operations in the area, but apparently no-one bothered to inform or give any compensation to the local tribes (the Huli tribe among those affected), or in some villages that compensation was given, the natives did not fully comprehend what was going to take place, until they saw large machinery devastating their forests and habitat in a matter of days. This resulted in tribesmen shooting company workers with bows and arrows, hijacking trucks, holding road blocks and burning vehicles. The company responded by hiring armed mercenary guards in order to protect their workers, their mining sites and drilling operations. Similar mining operations in the past have worsened conditions for many rural communities due to the severe environmental damage caused. Among the most infamous examples was the Australian mining giant BHP, which dumped 80,000 tons of rock waste containing among others cadmium and lead directly into the Fly and Ok Tedi rivers every day for two decades – an environmental disaster which, according to one report, will take more than three hundred years to clean up. Another example was the Panguna mine, which caused the Bougainville crisis and consequent civil war, the effects of whom still plague the country today.

to offer my services to their Department in my area of expertise in the following ways:

- By assisting in the Sustainable Arts Education Programme organised by the University of Papua New Guinea between the 5th and the 16th of July 2010 in the subject area of music;
- By helping Mr. Jonerhaggt in his teaching obligations as a visiting tutor in Music Composition, and
- By assisting as a course director for a research-related module (P.N.G. music studies)
- By giving a seminar presentation at the end of my fieldwork research that demonstrated my findings in front of the Dean, and acknowledged the support I received from the University.

I think that since both Mr. Motsy and Mr. Jonerhaggt helped me in any way possible, I found this exchange of favours beneficial to me. Working at a University-led sustainable arts programme put me in contact with other local musicians whom I had the chance to interview. It also helped me to familiarize myself with the local language and culture and also facilitated an entry to a rural community in the Highlands through my contacts during my stay in Port Moresby. This benefited me greatly in the long run, since it saved me from unnecessary expenditures for translators and accommodation,[186] not to mention the time to establish trust among the locals.

This trust would come in handy during the second part of my stay in P.N.G. that I spent among the BenaBena tribe at the Unggai-Bena district in the Eastern Highlands province (see Figure 42, below, for a map of Papua New Guinea and fieldwork sites).

[186] Budget accommodation is non-existent in Papua New Guinea. There are only 4 and 5 star hotels available which are unaffordable if they are meant for long-term stay. Through contacts of Prof. Motsy, I stayed at a friend's house (Paul Siwi, to whom I am very grateful indeed) and then at Prof. Motsy's house. During my trip to the Highlands, I stayed at Mr. Mopafi's house (Prof. Motsy's father-in-law), and with the Bena-Bena community tribe.

Figure 41: Papua New Guinea is located between Australia and South East Asia. My main bases of operations were Port Moresby and the BenaBena villages in the Eastern Highlands District. Goroka is the largest town in the region

As I could not go to my initial proposed fieldwork site with the Huli tribe due to situations outside my control, I chose the BenaBena. Prof. Motsy's in-laws were BenaBena, and promised to assist me if I went to conduct my fieldwork with them. The assistance, hospitality and viewpoints on music that I received during my stay among the BenaBena would result in changing my initial, rigid psychology / semiotic western-oriented musicology approach to a more ethno-musicological one, based on sociological viewpoints rather than cognitive ones. I discovered that, although there is great value in investigating variances in brain mechanisms and semiotic structuralism in music, and I have the outmost respect for such studies, if I pursued this path the underlying varieties of musical communication among the BenaBena might escape my notice. I would not meet them on their own terms, but I would be

trying to analyse their behaviour in performance and notational practice through a western musicologist's perspective.

Thus, my main focus of research among the BenaBena shifted from music representation in two-dimensional form to music communication, its manifestations and its changing practices in the face of westernization.

4.9. Music in historical perspective in Papua New Guinea

Historically, the musical 'evolution' in Papua New Guinea can be separated into three relatively distinct periods: a) Pre-1870s b) 1870 up to 1945 and c) after 1945. This separation, as well as the following information, are largely based on Michael Webb's and Don Niles' report on the musical history of the island,[187] and further cross-referenced through information given to me by Prof. Jonerhaggt.

4.9.1. Pre 1870: Traditional music era

Up until two thirds of the 19th century Papua New Guinea lay outside the cultural influence of the western world. All music developed and shared on the island received no inputs from outside – the only exchange taking place was between neighboring tribes or groups with similar beliefs and relatively comparable performance traditions. Thus, music evolved in a cultural bubble that lasted for almost fifty thousand years, since the first humans settled the island. Music during this phase in Papua New Guinea was a product of traditional folklore and religious belief – and had strong links to ritual worship, as well as a close association with social activities such as initiation ceremonies for male members, first menstruation for female members, weddings, war, and funerals. It acted as a founding cornerstone of traditional social practices to which people came together to demonstrate their

[187] Webb, M., & Niles, D. (1987). Periods in Papua New Guinea Music History. *BIKMAUS: A Journal of Papua New Guinea Affairs, Ideas and the Arts.* Vol.VII, No.1, March.

creativity within the community, thus establishing social cohesion, as I indicated in the first Chapter. Three major kinds of musical activities were normally carried out in Papua New Guinean traditional society:[188]

i) Traditional instrumental music with bamboo flutes, kundu drums, wooden trumpets and garamuts used for self-amusement, spirit invocation, attracting female (or male) spouses among others.
ii) Vocal music chants: in which the human voice intoned archaic syllables (or what I later understood to be poetic prosody used only for song by my BenaBena hosts) or syllabic patterns to invoke certain spirits, bewitchment and amusement.
iii) Singing accompanied with traditional instruments, for most socialization performances, war, demonstration of the tribe's strength, worship of deities and general celebrations.

1870-2 is suggested as a landmark in Papua New Guinean musical history / history in general, for one reason: mission influence started to prevail, to the point that it would start affecting the musical practices of the islanders. Christian missionaries did not approve Papuan folk music (see 4.14**)** for ritual purposes, a tendency that lasted largely until Papua New Guinea's independence in 1975, even though the Australian High Commission actively encouraged sing-sings for pragmatic reasons; cultural shows promoted interactions amongst tribes in a peaceful manner, minimizing warfare.

4.9.2. Middle period (1872-1945): Early Christian & external influence

As mentioned above, 1872 was a landmark for Papua New Guinea, as the first organised Christian missions started to settle. Before the turn of the century hymn books had been printed in several languages introducing Christian hymns (the first

[188] Ryan, P. ed. (1972). Encyclopaedia of Papua New Guinea. Vol. 2 L-Z. Melbourne University Press, Melbourne.

documented songs in Tok Pisin were published before 1914), Gregorian Chanting, and new styles from other Polynesian countries such as Peroveta anedia, ute and taibubu, with choirs forming around congregations. This change did not take place everywhere at the same time: The highlands of Papua New Guinea were unexplored until 1930 – the first Lutheran mission close to the BenaBena tribe I was staying with during my fieldwork, was established around 1933-1934.[189]

The influence of Christianity modified the traditionally 'static' music to Christian-style polyphony, and denigrated previously non-tampered practices and ideologies. Newly baptized Christians had to be 'de'-cultured' from their traditional musical practices in order to be 're-cultured' with the Christian beliefs and Christianized music. During this transition, many traditional elements of musical culture went into demise in the process (see 4.12 & 4.13). During the change from traditional beliefs to Christianity mission schooling was established (around the end of the nineteenth – beginning of the twentieth century in the coast, after the second world war in the highlands), and about the same time the gold rush began during which Australian miners brought the jaw harp. In the early 1920s gramophones started to appear in plantations. My BenaBena hosts had several interesting stories to share with me regarding their first reactions upon hearing music coming from 'machines' in the mid-1930s:

From my fieldwork journal: *Most are old enough to remember the day when the first radio came to the village (a story which I have verified by three different people so far). The guy who brought it was a villager who had been to Port Moresby using the Kokoda trail (a footpath in the mountains), and told the rest of the villagers that the music coming from within the radio was created by little people living inside the box. One day he switched the radio off and told the rest that the musicians inside stopped playing because they were hungry, and the villagers should bring them food (which they did, and the villager ate it all by himself). When the radio broke down (my interviewees didn't specify if this was because it run out of batteries or because of a malfunction) the villagers accused the man of not taking good care of the little people and they had died -thus, they buried the radio. The other story I heard being*

[189] I could not find an official report stating when the mission was first established. My BenaBena hosts told me that the first missionaries came to their region about seven or eight years before the Second World War.

told from another hamlet was rather different: the men said that when they heard it [the radio] *for the first time, the owner told them that inside the radio was a severed head that was singing.*

In 1933 the first movies with sound appeared and in 1935 radio broadcast started as well. During the Second World War, soldiers from Hawaii and Philippines introduced guitars, beginning another musical tradition, string-band music which, unlike Christian-influenced styles based on reverence and worship, was more appealing due to its themes that emphasized social aspects of life. After the Second World War guitars and ukuleles gradually increased in popularity, making string-bands a part of folk music in the northern coastal regions of Papua New Guinea, particularly New Ireland and East New Britain. Although guitars were common in the capital, the only instrument that I saw in working condition in the Highlands belonged to the priest of the Ungai-Bena district (not a native BenaBena). He used it to sing Christian hymns and not traditional music or string-band music. The hymns were sung in Tok Pisin.

4.9.3. Latest period (1945 till present day): Recent external influence and Power Bands

The most prominent events that influenced music and performance arts were three: i) the rise of the recording industry ii) interest from the Australian Commission in traditional music, and, resulting from it, the establishment of sing-sings and iii) power bands.

i) By 1950, the Australian Broadcasting Commission started to send officers to villages to record traditional village music. The first music released commercially featuring traditional songs was a 1949 recording by Colin Simpson and John Cunningham. In the same year, a local artist called Blasius To Una composed and released songs (hymns) in his native language (Kuanua) with guitar / ukulele instrumentation. In 1952, the Department of Education appointed R.J. Sheridan as a Traditional Music Research Officer, who, in 1958, released one of the first LPs

featuring traditional music entitled 'Music of New Guinea – An introduction'. When power bands started to appear around the end of the 1960s and early 1970, a small scale recording industry started to evolve which, by the time PNG became independent in 1975, was well in place. The record industry led to the creation of a Musicians Association in 1983, and in the same year the 'PNG Top Twenty' was established.

ii) From the 1950s onwards, there was also an increased interest from the Australian high commission in traditional musical practices. The Australian administration officers ('kiaps') created the sing-sings - cultural shows that called on local tribes to demonstrate their distinct culture, dance and music. The aim of these gatherings was to encourage tribes to meet in a non-war context, peacefully share traditions and improve relations between them. When the first sing-sings took place, prizes were given out for the groups that put on the best show. However, this practice quickly stopped as it led to violence between participants. The long existence of these festivals (Mt. Hagen festival, since the early 1950's; Port Moresby Show, 1953; Goroka Show, 1957; Tolai Warwagira, 1971) is evidence of their success in maintaining elements of traditional culture. With the motto of *samting bilong tumbuna* (the ways of our forefathers), sing-sings have helped to preserve traditional music and dance from being completely eradicated in the face of pressure to convert to Christianity and adopt a Western lifestyle and culture.

iii) In the 1970s power bands started to appear in cities, creating a small revolution in the way music was portrayed in PNG. This cultural shift originated in a new perception of what defines a performing musician. In the early days prior to the influence of Western civilization, a musician was anyone playing music at the time of mention – a perception that I also encountered in the Highlands in rural communities. As everyone was able to partake in sing-sings, create traditional musical instruments from bamboo (in front of me, on request) and play, there was no separation of music from any other cultural activity.[190] By making music available and keeping it at a specific level so as to engage in its performance, there was little separation between musicians and audience, and no concept of musical genius or soloist performer. Individual talent was recognized (most villagers from the

[190] That being said, specific musical instruments were not permitted to be performed (or even seen in the case of the Nama side-flutes) by specific groups within society, as mentioned earlier.

BenaBena acknowledged that Guyae, one of the elders, was the best singer for his intense vibrato voice) but it was not a reason to exclude others from singing / performing.

Power bands revolutionized this situation. They called for individual talent as music became a profession, and they drew peoples' attention by microphone and amplification. The new musical profession also called for a performer to be paid, that music was a commodity that could be bought and sold. The new sound and intensity of western pop / rock music that was once available only through recordings and radios was now made audible on a stage against ticket payment. Musicians were placed out of reach on a stage, for everyone to be seen – thus bringing about the concept of an attending audience in PNG. The musical style was a copy of western 'alien' music, as Professor Jonerhaggt put it.

Although initially bands were mostly string-bands, in the late 1960s rock bands started to appear: in 1968, the Kopy Kats (also written as KopiKats) released their first record, while 1969 saw the formation of the Stalemates, the Iarowari Drifters and the Paramana Strangers who received international recognition. In the late seventies, a Rock group from West Papua (Black Brothers) moved to PNG, making music part of political activism as seen in the west.

Inspired by the desire to become part of a modern society free of the tribal alliances of the past, listeners / audiences in the cities came to disregard traditional music and favour the new musical styles promoted by the Power Bands. Although they might have originated from different (even warring) tribes speaking different languages, they found that they could unite under a 'new' musical style which merged western influences from rock and reggae with string-band and peroveta anedia melodies and mannerisms. Lyrics were most often in Tok Pisin or English, but there have been occasionally songs in local languages as well.

Thus, we see that for modern Papua New Guineans residing in cities, their objective reality of what qualifies as music has been completely altered through social interaction with western civilization, which led them to re-interpret their entire concept of music within the span of seventy years. During my stay in Port Moresby I saw the result of this process, while during my stay among the BenaBena I was present while this change was taking place.

4.10. Urban Music situation in PNG: a change in music perception

The 1970s proved to be a most influential period for Papua New Guinean arts and culture. Papua New Guinea became independent in 1975; in the years prior to and following independence, the Australian commission and the new national leaders prioritized cultural matters and actively promoted the formation of various urban cultural bodies to ensure that local traditions were incorporated into the development of urban living in the newly established nation.

In 1974 the institute of PNG studies was established, which included a music department. In the same year, the Creative Arts Centre (which later became the National Arts School) was created which also had a music department. In 1983, this department founded a Music Centre, the purpose of which was to provide social services to Port Moresby, in the style of an active community centre. In 1980, the South Pacific festival of Arts was hosted by P.N.G. At University level, efforts were made to create a syllabus for Music Education in 1978. It was finally introduced in 1982. However, although this promotion seemed to be gaining in momentum across the country, it did not last for long. Numerous national decisions and initiatives from national organizations and independent media vied for the survival and quality control of music in the country in the next few years, but all were rather unsuccessful. In 1983, John Blacking was commissioned to evaluate the work of the National Cultural Commission and relevant provincial centres by the Ministry of Education of P.N.G.[191] In his report, he pointed out that there was negligence in the development of music and dance in PNG. What caused this lack of interest is unclear, however it could be argued that there was lack of interest by local authorities. This could not be further away from the truth, as both provincial centres and independent media promoted arts and especially music in urban centres. This was not enough; by early 1990s, organised (western style) music education in

[191] Blacking J. (1984). Papua New Guinea: Cultural development, Assignment report for UNESCO, unpublished. I gained knowledge for this paper by Don Niles who directed me to a paper by Crowdy, D. (2002). Blacking: PNG trip and UNESCO report, *Paper presented at the UNESCO Regional Pedagogical Conference on Arts Education in the Pacific in Fiji* which may be found here: http://portal.unesco.org/culture/en/files/40511/12668616863blacking.pdf/blacking.pdf, last accessed 12/9/2012.

universities was in complete disarray, and has only now started to change.[192] What was lacking was specified primary and secondary music education in schools. Music as a subject was not compulsory and it was grouped together with other arts subjects, if it existed in the school's curriculum at all. Even today, most schools have one expressive arts teacher whose subject area is usually to be found in the visual arts. There has been no specific teaching material, nor any plans to develop a music syllabus for schools in the near future. What is worse, urban centres in PNG are a microcosm reflecting the country itself: they are made up of people from distinct tribes with different cultural customs and languages. In order to communicate in terms of language, they use Tok Pisin and sometimes English. In order to communicate musically, traditional music is put aside, and common cultural musical norms are sought.

During my stay in 2010, musicians had just started to cover this educational gap. I had initially hoped to locate musicians familiar with western music that had been using WSN for almost as long as they were performers; however, while most participants had started their musical education in their early teen years, with a mean age of performance of seven and a half years, they had not learnt WSN necessarily at the same time, and very rarely used it while performing. The reasons for this were manifold: the majority of musicians who belonged to string-bands, bamboo bands[193] or reggae bands (on the rise since the late 1980s) and were already performing in venues around towns (mostly hotels or bars for western tourists) were not using scores. Then there was little or no equipment available – although music stores started to operate in the last twenty years in the capital and smaller cities in the north[194] where 'mainstream' tourism created enough demand for bands performing on western instruments, they did not sell sheet music or tablatures of any musical style until very recently. Hymnals and songs of praise were in wide circulation and some did include musical notation. However, these tunes were not taken into

[192] This information was given to me by Professor Daniel Jonnerhaggt and has to be taken at face value. The evidence existing of this decline is basically the lack of evidence of large-scale musical / cultural events taking place apart from traditional sing-sings.

[193] Bamboo bands play a specific style of music imported to Papua New Guinea from the Solomon Islands. Music is created by hitting bamboo tubes of various lengths which are standing up either with sandals or by lifting and then letting them drop to the ground. The style first arrived in the northeast of the country around Madang in the mid-1970s, and soon spread throughout the coastal areas.

[194] Namely Lae, Madang and Popondetta.

consideration for performance in tourist hotels and bars as they were simply out of place there.

I feel this historical interlude presented in 4.9 and 4.10 was necessary in order to provide the reader with the full scope of the situation regarding the change in musical practices in urban P.N.G., and how these came about. In the following sections I will focus on the effect these changes had on the musicians themselves, and establish how they affected the latters' mind-set in relation to the visual representation of music.

4.11. Why learn notation?

It would seem that commercial pop music in Papua New Guinea did not need a way to formalise two-dimensional musical representation so far either. The commercial pop music taste in the country is dominated by one record company. For many local musicians, the main target of their musical career: to sign a contract with CHM. CHM Supersound is Papua New Guinea's most successful record company and one of the largest in the South Pacific region. The company started operating in the eighties and gradually expanded its operations into video productions, concerts and shows. Currently, it produces 95% of the music released in P.N.G., with a catalogue of more than three thousand albums and a total of three hundred thousand songs. The company claims to be 'responsible for the collaboration, unification and fusion of P.N.G.'s diverse cultures and languages through music.'[195] This seems to be true, at least from a brief look into the company's recording artists: they come from everywhere in Papua New Guinea. Usually songs are in Tok Pisin, quite a few of them are in regional languages. However, the music of all songs has a peculiar familiarity, ranging from rock n roll and reggae to 80s and 90s pop and beat music. Oddly enough, video clips for songs look similar too. Singers are usually dressed in the traditional costumes of their respective tribes, and they perform their songs in 'natural' settings amongst their friends. As I have been told in conversation with session musicians from the University of Papua New Guinea, CHM supposedly have a very friendly policy towards its recording artists by claiming that they (CHM) do

[195] See www.chmsupersound.com for a detailed description of the company.

not charge artists for recording time, production costs and marketing expenses, something also stated in the company's website. When it comes to producing videos, no fees are charged as they use their own session musicians and production team. As a result, although singers may go forth with their own ideas and songs, the final product to hit the market may not be what they had in mind.

During my stay in Port Moresby, and as part of the deal I had struck with the Head of the Music Department at UPNG, I participated in a Sustainable Arts Education Programme organised by the University of Papua New Guinea in Gerehu, one of the most impoverished neighborhoods of the city. Of course, such courses were extremely popular across the city, which led to an overflow of participants from surrounding neighborhoods as well. My main responsibilities were to teach around thirty people between the ages of fifteen to forty-five Western standard notation, basic harmony, chords and song structure. Quite a few of the participants were musicians with several years of experience, while others were teenagers hoping to embark on a musical career.

I found that the participants had very little to learn in terms of harmony or chords, apart from how to put a name to knowledge they already had. As for representing music formally in two-dimensional form, the majority of the participants picked it up in less than a week, and were able to use it to present their own compositions by the end of the workshop. What really interested me were the reasons for which these musicians, old and new, wanted to learn music notation:

Consider the following collective discussion with the young musicians (names altered) participating in the programme:

G.A: *Why do you want to learn* [Western Standard] *notation?*

Alan: *Well, we know how to write a song, but not with notes.*

G.A: *Do you think that performers should follow the notation, or can they improvise?*

Joe: *They should stick to the notation, that's why we learn it.*

G.A: *What did you do until now? If you wanted to write a song and send it to a friend of yours who lived far away…let's say Rabaul, how would you send it to him?*

Joe: *We wrote the song and gave it to him, and teach him how to sing it.*

G.A: *Yes, but how?*

Bob: *I'd send him a tape or I'd call him and sing it. If he is a professional, he could make his own style. But if I wanted the music to play what I had in mind, he should do it my way.*

Nancy: *Yes, if he thinks that the structure of the song is not right, then he should change it.*

Joe: *No, if I want him to sing my song, I'd write the chords, and description, it's a reggae song, it's a pop song. The bass is to play its own rhythm, according to the chords, same as the guitar keys.*

G.A: *So then why do you want to learn notes?*

Bob: *First to arrange the song our way, the beat, the melody. To tell us the melody for the lyrics.*

One of their reasons for learning how to represent music visually in a formalised manner was to be able to control and monitor the songs they write, not because of copyright issues but in order to keep their songs the way they wanted them to be, although at the same time they seem to be open to variations if the performer is someone whom they consider 'a professional', that is someone with lots of experience and a ready-made career. Their main argument was that the purpose of representing music on paper through musical notation was to 'capture' or preserve the music performed. For this, they claimed a tape recorder would be enough. If the reason was to use notation as a tool of transmission, it would be far easier to learn the piece 'from someone who already knew it' or 'if someone would sing it to them', as they had usually done up to now, following the lead of more experienced band members when they performed together in tourist venues. However, what these younger performers came to realize was that the score could also be used by composers in order to give musicians directions for how to perform their work. These directions were the 'writer's will'- they could be dismissed as suggestions, or taken lightly by 'professional' performers.

They began to realize that through notation they would be able to make sure that the will of the composer prevailed: they wanted *their* music on their songs to be recorded (if the song ever made it to the production stage that is) and not the music from the company's (in this case, CHM) session musicians and producers. So, at least for these specific participants taking part in the University's workshop, representing music in two-dimensional form had to have a specific reason for existence: the association between music and its visual form could not be an abstract relationship without a reason of existence, but would ideally exist as a method to express their musical ideas through a formalized method.

Some examples that the participants in the workshops gave me of this practice were cassette tapes of local artists who had their work modified to the point that the final result was beyond their understanding as to how the production was made. One artist, Ipa Hupi from the Huli tribe had his song 'Sounds of Hela' performed in reggae style with a melody line inspired by Polynesian harmonic style. Another one, Sken Kewa from Simbu province had his song 'Slumz of Simbu' produced in a 1960s rock n roll style. Sugar Meri's 'Kuri Rup' (in the Melpa language from the PNG western highlands) was another big hit. The song featured beat music from the mid-1990s, while at the same time the lyrics were harmonized in Polynesian style. When I finally succeeded in finding a stable internet connection, I checked out the songs' video clips of song recordings from CHM's website: all singers were dressed in the traditional garments of their tribes, performed in natural settings and were surrounded by their friends who were dressed in similar fashion. Ipa Hupi had Huli tribesmen dancing behind him, Sugar Meri and his tribesmen seemed to blend traditional line Melpa dancing with club dancing (Figure 42 below), while Sken Kewa had an entire village dressed in traditional garments dancing twist around a bonfire.

Figure 42: On top, Sugar Meri's 'Kuri Rup'; bottom,the traditional dance of his tribe

Thus, one of the targets of learning the formalised method of representing music visually on paper (=musical notation) for them was to transfer the control of the music from the production team to the original composers. I do not know whether the musicians participating in the workshop ever managed to do that; the University of Papua New Guinea, which recorded the musicians playing their own songs without any major modifications, managed the production for the specific workshop I was involved in. Perhaps the workshop musicians were a minority who actually did mind

having their songs produced and altered in ways they never wanted. For the majority of artists under CHM's label seemed (at least on their video clips) brimming with confidence and full of happiness.

Regarding the participants who took part in the quantitative experiment and were actively performing what could be broadly termed as western-influenced tonal music: nearly all responses moved in a horizontal, left-to-right fashion, with the majority of responses being either invented 'analogue' notation, or pictorial notation. The only anomaly that indicated a difference in background culture in comparison to the British participants was the amount of abstract - pictorial notations. Two possible courses that may explain these responses may be the following:

i) Participants who produced 'abstract' responses were the first generation of settlers in Port Moresby: either they were simply not yet accustomed to (any form of) written text, musical or linguistic (even though they claimed familiarity with both), or
ii) Believed that transcribing music visually is futile, since the task defies any existing cultural norm of music transmission.

The argument I was presented with amongst the BenaBena participants later on, is that visual music representation is of little use without an elder person from the originating tribe in order to demonstrate when and how a/the piece is to be performed, whether dancing is involved, who is permitted to perform, which time of the year it is permitted to sing it, and if there are any specific stories associated with the song's main characters, among other information. I hope to deliver a more detailed portrayal of the BenaBena tribe in the following section.

4.12. BenaBena Tribe, Kenimaro, Eastern Highlands Province

In order to assist the reader, I present a list below with the names that will feature largely in the next few pages:

Prutson: local schoolteacher, my guide and translator throughout my stay amongst the BenaBena

Yanameto (Ian) and **Rapi**: Professor Motsy David's in-laws. Local coffee merchants, who were my hosts during my stay.

Mopafi (Fanaukai Lupalupa Mopafi) the elder: Ian's father, the oldest BenaBena alive in Kenimaro.

Ogue: Village elder; very keen on preserving the tribe's traditions, and one of my chief informants.

Simon: College student from Kenimaro; my translator whenever Prutson was not available.

Lavax, Tete, Guyae, Auta, Heto: Respected village elders.

Initially, I gathered all ethnographic material from the various hamlets of Kenimaro ((Keni, Logo, Sifu, Opeks, Siopeks, Moweto) in order to clarify participant responses regarding my original question (whether music notation is represented in a culture-specific or universal manner). Furthermore, I tried to establish existing models (or 'invented' ones) of the tribesmens' original musical notation and then examine whether it is descriptive or prescriptive[196] or would fit with any of the notational styles, as presented in Chapter 1.

However, after deconstructing this wealthy qualitative archive from my field notes, interview and audiovisual recordings, a new dialectic started to emerge. The question was not whether performers of music had the ability to represent four second-long music examples reproduced from an mp3 player – this, for the BenaBena tribe is the least probable medium in which they would encounter any sort of music. I realized that I should broaden my perspective of the sign-music relation to include all aspects and possible modes of representing music visually in two-dimensional form. As has been shown in Chapter 4.2, up until recently in Western art music, the score was

[196] See Seeger, C. (1958). *The Musical Quarterly* Vol. XLIV. Thorp, William H.

sacred and should remain unaltered. Interviews with participants originating from a classical background revealed however, that this perspective was not any longer common practice. By contrast, among the BenaBena tribesmen, the question on how to approach musical representation was considered much less relevant than questions of purpose ('*why* use it in the first place?'). *Why* would anyone want to 'write, draw, or carve'music down on paper? *Why* would anyone who is not a BenaBena be interested to learn of their music, especially music that they were at times forbidden to play? Interestingly enough, *how* was not among the questions most commonly asked.

As the following sections show, these questions may be answered best by examining changes in the BenaBena society from an earlier point in time, and following a rather indirect approach.

4.13. A World in Transition

As seen above, the truly traditional era of P.N.G. music ended in 1870. For the populations in the highlands (BenaBena among them) this period only came to an end in the early 1930s, as that was their first contact with the outside world through Australian gold miners. All musical forms developed within the community or through limited contact with neighbouring tribes with relatively similar performance traditions. Music was strongly tied to religious beliefs, rituals and customs. Customs usually accompanied with music in those early days were mainly social interactions of the individual with the village community and internal community interactions.

Occasions included: i) Birth. ii) Initiation ceremonies for males on three landmarks of their lives: a) Initiation from boys to novices b) Initiation from novices to young warriors c) Initiation for marriage. iii) First menstruation for female members; marriage. iv) Signaling neighboring villages. v) War. vi) Sacrifices (to Gods, as in the Nama cult described later on). vii) Incantations and witchery. viii) Village

celebrations marking new alliances, victories over enemy tribes, the welcoming of guests or allies. ix) Funerals. x) Self-amusement.[197]

Music provided the background for social events to which people came together to bond as active members of their community. Instrumental and vocal music blended with each other depending on the occasion according to circumstances and gender. For instance, women were not permitted to play specific instruments such as the Nama (also called Oyafa and Fepelo-kohi) flutes.

All this was about to change forever. The rapid westernization of Papua New Guinea and increasingly frequent contact with the outside world resulted in fundamental changes in the BenaBena society, which became obvious through comparison of my data with the unique and meticulous study on the tribe's ethnography by Lewis Langness in the late 1960's.[198,199,200] Quite a few of the participants interviewed were old enough to recollect memories of the first missionaries and prospectors who moved to their region, as well as the first patrol officers. Spinks[201] mentioned that in the BenaBena region '*the natives were peaceful… their/ [our] return was welcomed and honoured by a festival of singing and dancing'*. This atmosphere changed significantly according to patrol officers during the Second World War, as reported by Ewing:

> When civil control was relaxed, however, and the European missionaries withdrew, inter-district and inter-village fighting was resumed. People formerly regarded as 'controlled' refused now to acknowledge administrative authority; and one officer met with sharp rebuke from A.N.G.A.U. headquarters when he tried to remedy the situation by burning houses, killing pigs, destroying gardens, and taking hostages, to persuade the villagers to report for census-taking during patrols. Certain villages…refused to help patrols with food or carriers.[202]

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[197] There may be other occasions as well; these are the ones my BenaBena hosts named.

[198] See Langness, L.L. (1963). Notes on the BenaBena council, Eastern highlands. *Oceania,* XXXIII, No.3, pp.153-170.

[199] Langness, L. L. (1967). Sexual antagonism in the New Guinea Highlands: a Bena Bena example. *Oceania* 37,3, pp. 161-77.

[200] Langness, L.L. (1969). Marriage in BenaBena. In *Pigs, Pearlshells and Women*, R. M. Glasse and M.J. Meggitt (eds). New York: Prentice Hall.

[201] Spinks, K. L. (1934). Mapping the Purari Plateau, New Guinea. *The Geographical Journal*, Vol. 84, No. 5 (Nov), pp. 412-416.

[202] A/Lieut Ewing (1943). D.O., A.N.G.A.U., Ramu District, Report for month of May.

Specifically in the villages where I was based in (Keni, Logo, Sifu, Opeks, Siopeks, Moweto) there was one recorded incident that involved one of the patrols and the villagers in 1947/8. According to Skinner: *'Certain districts, then at enmity with Kogu and Moiife, offered some resistance to the patrol. Carriers were ambushed and attacked, and a number of shots fired.'*[203]

Although such incidents took place more than sixty years ago, they were still remembered and would be brought up in conversation by my participants as an example of mutual misunderstanding: the patrol officers claimed that they had been attacked, but the BenaBena description of similar events read somewhat differently:
From my fieldwork journal: *Mopafi said that he was about 10-15 years of age when he saw the first white man, Masta Mick* [probably Michael Leahy?] *who came with some Kiaps* (Australian patrol officers) *down where the river is* [The river Bena, from where the tribe and the entire region get their name]. *When the men* [BenaBena men] *saw them, they thought that they were devils; dead people who had come from the grave to take them away. They thought they were here to take their women away. The fathers and brothers hid the girls in the bush (jungle) and the men took their bows and went to the river to send them away. When the patrol officers saw that the villagers had far from friendly intentions, they fired a shotgun on a rock and blew it to pieces. The villagers panicked and run away.*

Another elder described the same incident adding a bit of…salt:

From my fieldwork journal: *Also, one of the men (Tete) told me the second part of Mopafi's story. He said he was about ten years old when the white men came, and he thought that they were cannibals. After the episode with the gun, they were reluctant to approach the whites again. Then the whites, as Prutson put it: 'Tamed them with salt'. They put some salt on their palms, licked a finger and tasted the salt. The villagers approached to taste the white powder, and liked it very much.*

[203] Skinner, R. I. (1947/8). Patrol Report No. K5.

Tete was well aware of the material benefits or 'cargo' as he called them of their encounter with the white people at that specific time. He said that their lives started to become much better than before. He said that previously they had been using stone tools, but now they had metal knives, clothes, tin fish, and mobile phones. Earlier on, their lives had been difficult: they tended pigs, fought each other fiercely, and worn clothes made from the bush. The latest western novelty had come in the form of mobile phones two years ago. Since electricity can only be found in Goroka (half an hour away by truck) the mobile phones seem to have a status character. Senior members of the community wear them around their necks as a token of affluence and wealth, and younger people would go to extremes to purchase them. However, there was a more drastic sociological change that turned the world upside down as they knew it: the arrival of Christianity.

4.14. The arrival of Christianity

The most crucial aspect that affected BenaBena lifestyle has been the introduction of Christianity in P.N.G., first by Lutheran missionaries and then by the Seventh Day Adventist Church (SDA). In the process, practically all traditional rituals that came into conflict with Christianity were abandoned, and in many cases these included participation in sing-sings or performing specific instruments such as the Nama / Oyafa, as they were strongly associated with the indigenous 'Nama' religious cult.
Adopting the SDA faith meant that the BenaBena could no longer eat pork, as it is forbidden by this branch of Christianity. This would mean that one of the tribe's basic source of protein for thousands of years was no longer being used as a basis of nutrition, and new alternatives would be sought such us the introduction of cattle farming, which the BenaBena may have seen as humiliating since they saw themselves as hunters and warriors, but not herdsmen.[204]

[204] During my stay at Kenimaro, the BenaBena were involved in a tribal fight over land with their neighbours, the Glopa. The BenaBena fighters did not expect those who tended herds to be involved in the fighting, however they did expect non-combatant male members (farmers and herders) to provide for them. On my first day, during a village council a herder accused five or six warriors for selling one of his cows to go to Port Moresby so as to avoid a police bounty on their heads. The warriors (my guide Prutson included) became so angry that they wanted to kill the farmer there and

The effect that the new religion had on music was equally dramatic; as most occasions to perform were linked with ritual behaviour, by converting to Christianity the villagers adopted an entire culture that would force them to simultaneously alter their existing cultural behaviour, their entire social structure and way of living, as well as their musical practices.

One specific incident proved to be of extreme importance for this change. It was corroborated by most of the elders in the community (Mopafi, Ogue and Lavax, on different occasions) who were present when it took place at the Lutheran Mission (established around 1933-1934, but now in ruins) close to their village:

From my fieldwork journal: *The most interesting data I'm receiving is the one that the participants are most often wishing to talk about: The positive and negative influence of Christianity in their traditional culture. I use the term culture and not music since the participants themselves do not separate music from other cultural practices* [at least not when giving responses related to the visualization of music]. *In terms of traditional music two of my male participants* (at the time I had not yet interviewed Lavax, who also confirmed the story but in much bleaker colours) *have told me a 'trick' the* [Lutheran] *missionaries used in order to attract a larger number of people, and convince them to join the new religion. After their mission was established close to the village, attendances and converts run into very few numbers* (Mopafi said no more than five for the entire tribe, and those were very old men, or not BenaBena). *The missionaries somehow managed to obtain a side bamboo flute* (Nama / Oyafa: used only for ceremonial purposes by men, and considered sacred – women and children were strictly forbidden to see it under penalty of death*) and started blowing it for the whole valley to hear and gather.*

[The ritual nature of the Nama side flute is described in detail by Langness. When men performed the side flute in various ceremonies, in case women had to be present the performers were hidden behind branches held by their peers so as not to be seen,

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then for shaming them, however (as I had been told later by one of the village elders) they restrained themselves largely due to my presence; they did not want to mark the day of my arrival with a killing. The herder's accusations, according to the same elder, were just; however, the warriors felt that the man had no right to bring anything against them, since he was not fighting himself.

as they held the belief that the sound of the flute was made by a 'Nama' bird. When Ogue played the flute for me, he also mimicked the bird's cry. Langness[205] argued that women knew that the side flutes were played by the men and not by the 'Nama' bird, but played along so as to prevent a possible threat to the group by the division of loyalties.[206] Sachs offers another reason for the ritual nature of flutes, their importance and use by the male members of the community:

> Flutes, like bone scrapers, are phallic. Primitive man cannot overlook the resemblance between a pierced straight instrument and the penis; even in modern occidental slang the penis is designated by flute names (compared to the clarinet in Greek culture). Early civilizations where the masculine impulse predominates connect the ideas flute – phallus – fertility – life – rebirth, and they associate flute playing with innumerable phallic ceremonies and with fertility in general.[207]

However, for some reason this tradition stopped. Langness dated the abandonment of the 'Nama' flute cult at the 1960's, but did not specify the reason.[208] At around the same time, BenaBena men also started to abandon the practice of sleeping in the traditional 'men's house', and slept in a home shared with their wives. Although the tribesmen said [to Langness] that it was what the Australian administration had asked them to do, he found that this change of lifestyle was suggested by the tribe's local government councilors.[209] The cause for this change may well be the continuation of the story recorded below

From my fieldwork journal, continued: *They* [missionaries] *used the Nama in order to gather the villagers, who were very surprised indeed to see them playing the flute, and were in turn horrified by what followed: The missionaries broke the flute and threw it to the ground, saying that it is a piece of wood and challenged its divinity, and showed to everyone that there was nothing sacred about it.*

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[205] Langness, L. L. (1967). *Oceania* 37,3:161-77 p.174
[206] Langness, L. L. (1974). Ritual, Power and Male dominance in the New Guinea Highlands. *Ethos,* 2, pp.182-212 at.208
[207] Sachs, C. (1940). *The History of Musical Instruments*. W.W. Norton & Company. New York, p.45.
[208] Langness, L. L.(1967): p.175
[209] Langness, L. L.(1967): p.175

When I asked the elders how the missionaries got hold of the flute or learned how to play it, they did not know; they assumed that their tribal neighbors had shown it to them, or they learnt it in Goroka,[210] the largest town in Eastern Highlands. This would have been quite possible, as the side-flute was quite common amongst most Eastern Highland tribes.

From my fieldwork journal: *This was the beginning of the end; the men were so ashamed that they gradually stopped using the flute, not teaching its construction to their sons. The missionaries showed little interest in the native music or instruments (apart from the Nama which they discarded after using it to call the villagers) and taught them Hymns of Praise in Tok Pisin and English instead of the BenaBena language that they spoke. The impact of this behaviour towards the native culture by the missionaries, and also the response of the villagers who started to doubt their ancestral practices has resulted not only in the change of reason for performing traditional music (mostly for tourists and sing-sings) but it also led to the extinction of certain elements of culture such as initiation practices and the songs and instruments associated with them such as the Nama. When Ogue made one from scratch at my request, everyone present under the age of thirty admitted that they had never seen or heard such an instrument. Prutson himself said that although he had seen the instrument before, he did not know when it was used.*

When Ogue made the flute for me (see Figure 43) it caused some considerable stress between the oldest members: Mopafi told him that he should go ahead and do it, so that newer members of the community should see it and learn, while Lavax was against it, saying that they should not show its construction and perform it in front of everyone, particularly the (older) women, and he left in anger.

[210] At this stage a scouting war party from the neighbouring tribe ventured on the outskirts of the village, which signalled the end of my interview. From the social side of things that affected my work during my visit, there was a tribal fight between the village I was located and a neighbouring tribe over a land dispute. This is something that has been going on for the last eight months, and from my hosts' behaviour and also from what I had read, it was nothing new in the region. As a foreigner I was seen as neutral and was never in any immediate danger; however there was wild speculation as to who I was and what I was doing there. Most notably, I was assumed to be a gun dealer, a drug trafficker, a coffee merchant and - most commonly, due to my typically Southern European olive skin complexion – the illegitimate son of my host (Mr. Yanameto Mopafi) with an Australian lady.

A bamboo trunk was selected, scraped and cut at a length of 40cm. A hole was opened on one side with hot timber.

After widening the hole to about 4cm, the instrument is ready to play in a duet.

Younger members of the tribe made side flutes on the spot under Ogue's guidance. Lavax (last picture, centre) disapproved and left soon after.

Figure 43: Ogue making a Nama flute and performing together with Mopafi

When I asked him why he had left, during our personal interview for the experimental procedure, he was very upset and refused to talk about it. After some effort and persuasion, he told me about the Nama cult which I verified from Ogue as well and also mentioned by Langness, but seemed rather embarrassed by the fact that I had found out. It is obvious why Langness had not found out at the time what had happened: The tribesmen in front of me were still ashamed of the event fifty years after it had taken place.

Christian influence did not only concern music: Prutson's mother, Pemekula (Figure 44), had another story to tell. She vividly remembered that, when the first Christian missionaries came to Kenimaro, they forbade villagers to take part in traditional dances or perform their own music. Furthermore, they asked them to remove their traditional clothes made from bush materials, together with their hand and nose ornaments made of lace. Instead, they asked them to dress in European clothes and to wait for the 'second coming of Jesus'. They taught them Christian hymns in English and Tok Pisin (Lingua Franka in P.N.G.), even though only a small minority of the villagers was familiar with the latter and no one could speak the former at their time of arrival.

Figure 44: from right to left: Lavax, Geelokiso, Geelokiso's great-grandson, Pemekula, Prutson, myself

Pemekula's viewpoint of the incident at the Lutheran mission was that the missionaries did what they did (break the Nama flute in front of everyone and

challenge its sanctity) because the villagers complained to the Kiaps (Australian patrol officers) about their behaviour when they next visited their area, as they thought they would take their side since they promoted sing-sings. It is unknown whether the Kiaps ever confronted the missionaries about it. According to Pemekula, the missionaries became particularly angry when they heard the BenaBena playing slit or kundu drums. In Ian's personal evaluation on this is that the missionaries might have thought that the natives were practising voodoo. Lavax who was present during Pemekula's interview stayed silent. He repeated the story regarding the Nama's secrecy and sanctity, and the shame that the villagers felt when they saw the missionaries breaking it. This public exposure could also possibly explain why the Lutheran mission was later abandoned, and the villagers joined the SDA church shortly thereafter when they established a church on the outskirts of the village itself. As Pemekula's version of the story was not verified by anyone else, I can only approach it with relative skepticism.

Was the missionaries' behaviour understandable or justifiable? By forcing the natives to abandon their cultural practices, they forced them to give up their traditional music as well, and adopt a different style, one more fitting to the church's 'universal' message. It would seem though that this message is strongly associated to Euro-centric cultural practices. Although Tete considered the arrival of white men as something positive, the overall effect on the local BenaBena culture of this arrival was monumental, as it changed their society (music included) altogether. By August 2010, out of the ten occasions where music would formerly have been performed in the community, I had witnessed only three situations where music occurred naturally: Marriage, war and death (funerals). On request, the older members performed for me songs from female and male initiations which gave them (concluding from my hosts' accounts) great joy, as they were pleased that someone would be interested in their 'old ways', and also because they wanted to demonstrate these 'old ways' to the younger members of their tribe who had never seen them. Their society had changed so much in the last forty to fifty years that all occasions to perform these kinds of songs had either been suppressed or eradicated by Christianity, or presented only on request to tourists for a fee. Ogue performed one of the initiation ceremonies for me to see and hear one early morning (Figure 45). As

very few tribesmen had seen this ceremony, a small crowd had gathered by the side of the river to see what we were up to. In this ceremony, young men would have to swallow a cane (Ogue told me that in the past a worn-out bowstring would be used) until they gagged, roll leaves into thin tubes and rub their nostrils with them until they bled, and have a miniature arrow shot at the urethra. The ceremony is described in detail by Langness.[211]

Figure 45: Ogue performing a male initiation ceremony

Before each task, Ogue would sing a small song 'so that the task would become easier', as he himself said. For about one hour, we (the tribesmen and I) sat in absolute silence watching a man in his late eighties chant, dance and perform ceremonies than seemed quite ruthless. When later I asked him to repeat the songs for me, he refused to do so, saying that 'he is not doing the initiation ceremony now', and to sing the songs outside the ceremony was not appropriate. No-one from the younger tribe members had seen anything of the sort. The oldest man present, Tela, who was in his late fifties, said that he had never seen any of these dances or songs. He also told me that although the text of the 'chants' was in the BenaBena language, it was in prosodic style, and he could not really understand it.

[211] Langness, L. L. (1999). *Men and 'Woman' in New Guinea*. Chandler & Sharp, Publishers, Inc. Novato, California, p.7.

4.15. War, Language and Music in the air and on paper

The constant fear of the BenaBena was if the warring tribe would poison the river. How to encode sounds in a two-dimensional form by developing literacy and music notation was of less concern. When asked why the BenaBena (and in extent, any of the Papua New Guinean Highland tribes) did not put any value on developing musical notation, or literacy in the first place, Prutson told me:

> If the people believe their entire world is within a 20 kilometre radius, they cannot comprehend the language of the neighboring tribes and are usually at war with them, why would they even bother to write music or even language? Their songs wouldn't be heard at the other side of the mountain, and the people there had their own songs. For these others, our songs to them, and their songs to us, meant one thing: WE are here.

The BenaBena speakers were estimated at 12,000 where the total population of the country was just under 2.2 million in 1966 (National Statistics office of P.N.G.),[212] which constitutes 0.54% of the population in a country that counts 841 different languages (Ethnologue, 16th edition). The most recent Ethnologue report estimated their number to 45,000 (1998)[213] – see Figure 46 for language distribution. Although living conditions have improved, the number of speakers has not increased as younger people tend to use Tok Pisin rather than BenaBena, and consequently speak to their children the former rather than the latter. During my stay in Kenimaro, I noticed that no children below ten years of age could speak BenaBena. This is not an official statistic report of course; children in isolated communities (such as the one in Moweto) seemed to have had better language abilities than the ones in Keni and Logo where I was usually located. After attending a church service in the village that was entirely held in Tok Pisin, one of the village elders jokingly told me that they would soon need a translator to speak to their children, or a teacher to teach them how to speak BenaBena. The map below in Figure 47 represents a part of the Eastern Highlands Province in the Highlands of New Guinea were BenaBena is still spoken.

[212] See http://www.spc.int/prism/country/pg/stats/, last accessed 10/5/2012
[213] See http://www.ethnologue.com/show_language.asp?code=bef , last accessed 19/11/2012

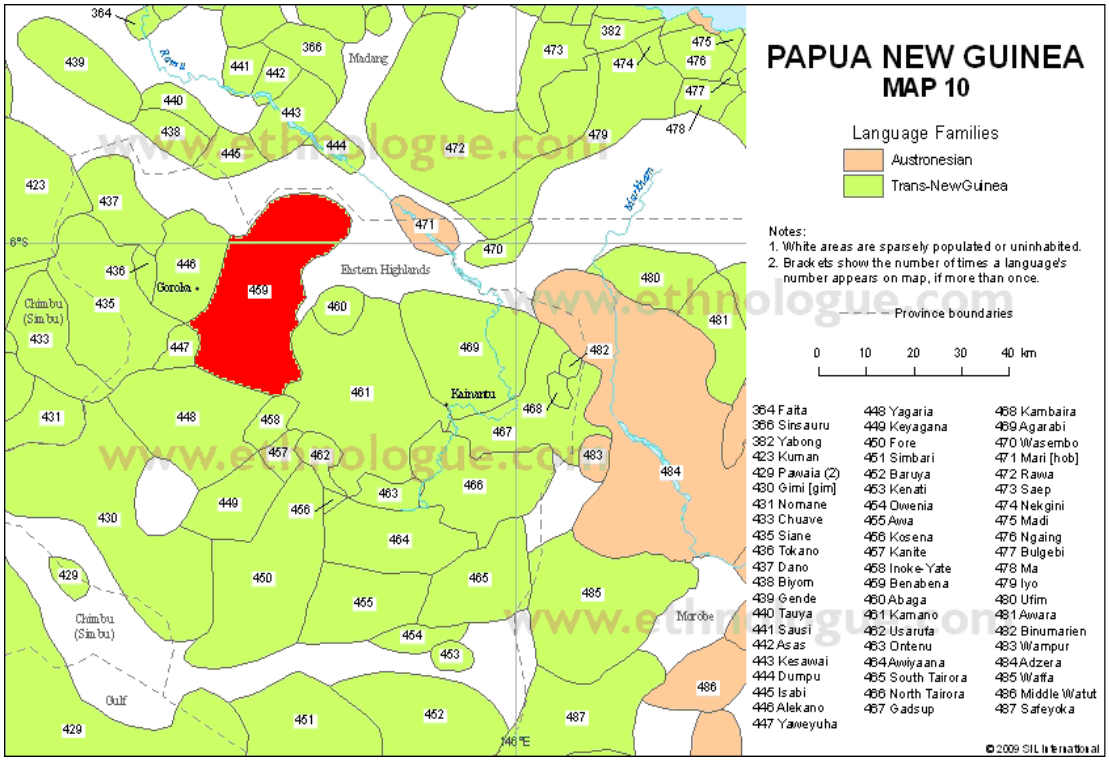

Figure 46: Language distribution of BenaBena (in red) in Eastern Highlands province[214]

Prutson's point about the 'others' suggests that the barriers separating the BenaBena from their neighboring tribes were not just of a linguistic nature. As they controlled the land for hunting and farming, they had been at war with one or more of their neighbours at any given time; they were at war with the Makia (a tribe between them and Goroka) from times unknown up until the late 1980s, fighting for control over the Bena river bridge. When that tribal conflict ended with a ceremonial breaking of arrows to signify the end of warfare, a new conflict with another neighboring tribe, the Glopa, started. Once again, the reason was land control: A road company wanted to set up a quarry, and asked permission from the BenaBena to mine the mountains at the border of their territory. The Glopa quickly laid claim to the same mountain in order to get compensation from the company. War was inevitable, with bows used as much as modern high power-rifles (Figure 47).

[214] Lewis, M. P. (2009). Ethnologue: Languages of the World, Sixteenth edition. Dallas, Tex.: SIL International. Online version: http://www.ethnologue.com/show_map.asp?name=PG&seq=120, last accessed 20/4/2013

Figure 47: BenaBena archers: left, an archer from the first Goroka sing-sing (1950s). Right, a modern archer from Kenimaro (2010)

While Berndt[215] portrayed a relaxation of tribal conflict in the Eastern Highlands province due to 'western progress and enculturation' brought in by local missions, schools, administration and markets, Podolefsky's work[216] demonstrates quite a different perspective: tribal warfare in the Highlands of Papua New Guinea is now conducted because of the disruption of the predominant social and cultural norms brought in by availability of goods, and at a much more lethal ratio due to the introduction of guns.[217]

[215] Berndt, C. H. (1953). Socio-Cultural Change in the Eastern Central Highlands of New Guinea *Southwestern Journal of Anthropology,* Vol. 9, No. 1 (Spring), pp. 112-138.

[216] Podolefsky, A. (1984). Contemporary Warfare in the New Guinea Highlands. *Ethnology*, Vol. 23, No. 2 (Apr), pp. 73-87.

[217] Podolefsky tells us: 'Prior to contact with the outside world, stone axe heads and salt were produced in local areas where these resources were available. Redistribution was accomplished through trade. One of the functions of intertribal marriage was the facilitation of trade between autonomous political groups. With the early introduction of western goods, particularly steel axes and salt, local production was discontinued and marriage was no longer necessary to maintain these trade relations. As trade was discontinued, so declined the opportunity to make marriage arrangements between non-adjacent groups…Thus, as older people died and fewer marriages were arranged between groups, the web of affinal and non-agnatic kin ties decayed. Intertribal marriages provided a linkage through which groups could communicate, and a mechanism and reason for containing conflict. With the decline in intergroup marriage over time, the likelihood of a dispute expanding into full scale warfare increased.' Podolefsky, A. (1984). p.85.

Going back to the issue of communication and language diversity, the key aspect is to see how (linguistic and musical) script develops and benefits a community. Script, as a rule, does not develop in hunter-gatherer societies. The first step towards the written word is a switch from hunter-gatherer to agricultural societies. Farming leads to food surplus, which in turn leads to population growth, specialization of labor, trade, and in time, the existence of ruling classes that develop bureaucracies. These parameters in any combination are vital for writing systems to develop. The first forms of writing undoubtedly remained as a privilege of the few: merchants, palace scribes who managed bureaucracy, collected taxes, and, at the same time, created propaganda in favour of the ruling class, promoted religion and so on. However, all this may be short-circuited with idea diffusion: if a friendly neighbour comes up with a beneficial idea, it usually spreads to other communities. If conservative warring communities live side-by-side, inventions were not readily shared.

Consequently, there was no word in BenaBena for writing. One had to be 'invented', when the later generation of missionaries attempted to translate the Bible into the BenaBena language. Up to the point of my arrival, there was no word for notating music either. During our interviews with the participants, Prutson used the term 'raitim' in Tok Pisin, meaning to write, and then switched to '*go-ehibe* = to write, build' in order to describe to them what I was asking them to do for Part I of the experiment. This caused the first group of my non-literate participants to refuse to take part in the experiment, claiming that they cannot write. After a brief conversation with Prutson, I realised that 'writing' music is not what we are attempting to investigate; it is how music was to be represented visually in two dimensions. Therefore, we saw that '*koyo-ehibe* = to carve / inscribe' seemed to have a more positive response. The actual translation of the term *koyo-ehibe* would be 'to act like carving,' whereas *go-ehibe* stands for 'to act like writing'. Drawing was considered inappropriate, as my guide suggested that this would be understood by participants to include colour. Although such an investigation would indeed undeniably produce highly encapsulating results, it was not the focus of my investigation. Varying perception of colour in relation to music was a parameter I would not be able to account for.

It came as a surprise to the BenaBena that a musical transcription of a western musical piece (in WSN) may have a similar 'appearance' (the same notational form) to a piece of their own music. This astonished me as well, as I thought that the idea would not be completely foreign: after all, the BenaBena language, when written down by missionaries, deploys roman characters. On the other hand, the participants I worked with were not literate, and had seen shops that belonged to Chinese merchants in Goroka having signs in mandarin characters. This may have possibly led them to believe that since different languages use different scripts, similarly different musics may use different systems of visual representation.

However, requesting over forty year-old non-literate BenaBena 'performers' to represent music with shapes was a task in itself. Where the Kalasha[218] claimed that it was *impossible* to write down music because of its nature, and they were baffled when I made the comparison to language and shown them the formalised method of representing music in the west (WSN), the BenaBena by contrast were fully aware that music, just like literate words, could be written down or broadly represented through visual means, yet they were *unable* to do so. As they believed, since there was no indigenous linguistic script, similarly there could be no formalised method of music representation. As demonstrated in the previous sections, there had been no use for literacy. Stories were passed down orally, as was essential knowledge about hunting, farming, warfare, basic tool making as well as ceremonial and recreational songs, rituals and dancing. Visual representation of ideas and beliefs was not uncommon (as in the Nama cult). As it emerges from the fieldwork interviews, writing a sing-sing down would be a task beyond anyone's ability. An *account* of the event could be written down as a story (as a descriptive historical event), but the story itself (what the story actually means) could not be 'there, as it would be with the people'. I later realised that the BenaBena were trying to say that without a local tribesman present to describe the event and its meaning it would not be understood by others. Therefore, BenaBena participants argued that the presence of a community member is necessary in order to decipher the meaning of their visualizations of

[218] Kalasha 'performers' of the Hindu-Kush with whom I run pilot experiments in 2009. The Kalasha community could perhaps reflect a notion of music was somehow closer to the Indian perspective, which lacks a systematic written musical tradition.

music, which would comply with the directives I gave to the participants when 'carving' their responses to the auditory stimuli.

Music for the BenaBena acted as a language in the past, conveying, on specific and limited occasions, semantic information. In terms of musical practices, what emerges from the fieldwork data is that music, apart from its ritualistic purposes, was a way to convey messages; different musical instruments would be used for different occasions and narratives were presented through melodic infrastructure. The knowledge of this 'code' of instrumentation and melody enabled its users to act in matters that required their attention - analogies to western horn calls come to mind that were employed by the military or hunters, in order to give movement directions in battle or during the hunt. Feld[219] presented the case of the Kaluli tribe in PNG who use sound to advantage over other sensory systems, and transform their viewpoint on the world based on their 'transformations' into elements of nature, namely birds. The BenaBena shared this attribute with the Kaluli in the past through the Nama bird cult, with the mythical Nama bird whose voice was the traverse flute made for me by Ogue. In present days, perhaps the whistling between tribesmen as a signal call in the manner of the local bird of paradise is the closest thing. These whistling calls were most often deployed during tribal war in the bush, so that men would not get lost in battle, confuse the ally with the enemy, signal each other current positions and battle formations. In peace, whistling acted as a greeting (Figure 48).

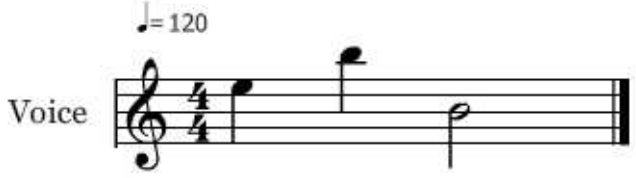

Figure 48: BenaBena whistle

Although these whistles convey little apart from their function as a basic signal call, there is enough variation within a particular melody to permit listeners to distinguish 'callers' from each other. When I attempted to imitate the whistling call, Prutson and

[219] Feld, S. (1982). University of Pennsylvania Press, Philadelphia.

Simon burst out into laughter. I was dismayed, as I thought my whistling was relatively accurate. On asking if my imitation was not correct, Simon said: *'No, no. You just sound like a George imitating a bird.'* Feld's findings were right in front of me: thirty years after, and in another tribe. In my (western acculturated) mindset, I am trying to *imitate* a birdcall; for Prutson and Simon, the call was not an *imitation* of a birdcall. It was the birdcall used by them in the same manner used by the birds: to signify that 'I am here'.

If a community can adjust to reality through acculturated meaningful sounds in addition to language, they have the advantage of using music(al means) as another channel of communication for the community's benefit, which would not make use of a visual aspect for music ('drawing' sound) but a metaphorical one ('impersonation' of a bird). The BenaBena interpretation of the world was unconsciously based on the sonic attributes of their environment; Prutson, translating the mindset of the elders, placed a sonic boundary with the neighboring tribes. *'For these others, our songs to them, and their songs to us, meant one thing: WE are here.'*

The pre-Christian BenaBena, as non-literates in language or music, moved freely in an unbounded world where signs as icons and music were closer. Literacy, or a formalised representation of musical sound, would have restricted them both in language and in music as it had no obvious benefit. The rapid loss of their cultural identity in the last decades meant that they were bound to social constraints and values foreign to their indigenous practices.

These social constraints were forced onto them, and lured by the benefits of cargo (metal tools, superior weapons and technology) they did not see the social change that the new carriers of culture did impose on them until it was too late, and found themselves changed.

4.16. Surviving trends

This altering social perspective would change BenaBena reality forever, and transformed their musical identity. Despite the appearance of radios, the composition and performance of songs in the 'traditional' style did, by no means, become extinct. It survived only through sing-sings. Furthermore, despite the pressure from the church, not all things had changed: for one, the BenaBena still composed and sang songs in their own language and style of their forefathers, without deploying a two-dimensional visual element. Consider the conversation below:

From my fieldwork journal: On my last day at the village, the villagers gathered around to sing songs of the 'old times'. One of the songs was about one of the warriors whom they remembered and had been long dead now. The first song about one such warrior was about his bravery in battle. It was described to me as such by Ian:

Ian: *This song they're going to sing is about one of our village warriors, who had killed Makia, the next village up-up the road from the bridge. Those were our traditional tribal enemies and this warrior had killed a number of them, and he put one foot up on their back, on a dead body, and he sang this song.*

[…]

G.A: *Who composed this song?*

Ian: *He himself.*

G.A: *Oh, the warrior* -

Ian: *He put one foot upon the dead corpse, you know, this is intimidating to the enemy.*

G.A: *So what are the lyrics saying from this song?*

Ian: *You know, ah-ah, you know, this is what, we have killed him with our hands, and you know this is it, this is the result, telling the opponents.*

The starting group was about five to six people. When they started singing about ten were there. The following pattern emerged for all songs sung on that day: One of the elders would sing solo, 'introducing' the song. Then the melody would be picked up

by two or three men who sung together with the 'leader'. When they seemed to be entering the second verse, the entire group would join in. Gradually other villagers, who heard them singing, started gathering around. Those who arrived and wanted to sing, joined the singers on the right. Those who wanted to sing but did not want to be caught on camera would sit slightly behind me (see Figure 49), discreetly avoiding the camera.

I found BenaBena very camera-conscious. They did not want to appear on pictures if they thought they were not wearing the right clothes, or did not look very good. Whenever they saw me point a camera towards them asking for their permission to take a picture, they always asked for a few seconds to fix their hair or straighten their clothes.

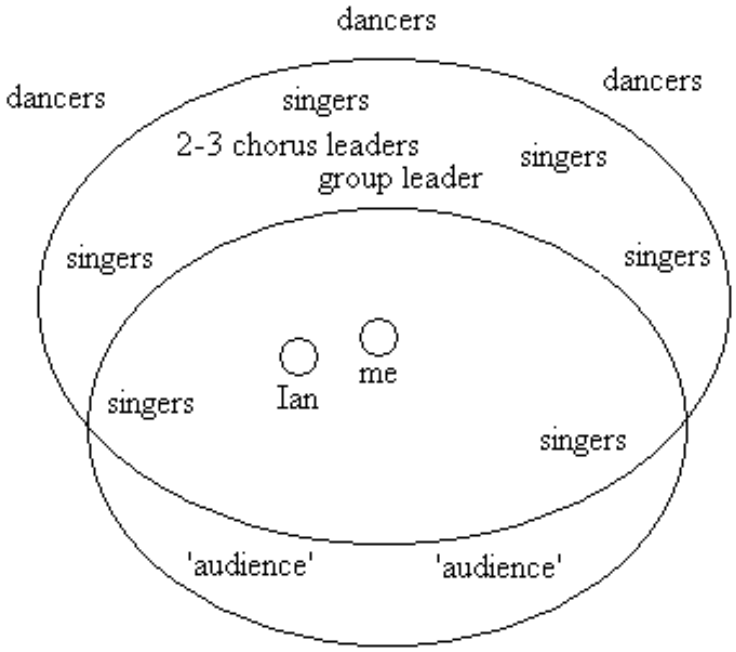

Figure 49: Layout of performance

Those not singing either went right behind the singers who were sitting on a semi-circle and danced behind them shaking mock-or real spears and leaves, or sat behind me. The performer-audience separation was based on the current action of the individual. If someone wanted to perform in any way, they would join the performers across (see Figure 50 below).

Figure 50: BenaBena in song

If he/she decided he/she had enough, he/she would come across them and sit down. Instead of one song, the group did three songs in a row. I stopped them at the end of the last song in order to ask some questions].

G.A: *Ian, what did they sing?*

Ian: *They sang many songs. One songs my grandfather composed was about many of our men and moving to Christianity and you know they say, and you know, they said there is no-one here to look after the land. And Tela's father composed, who passed away, composed another song, were Isaac* [It was at that time that I learnt Ogue's 'Christian' name] –

G.A: *Isaac?* [I point at Ogue sitting behind me, the man who made the flute and performed the male initiation ceremony. He smiles.]

Ian: *Yes, Isaac had 'beaten' a man from the Makia* [Ian did not specify what he meant by beaten]*, and the police came and taken him away in the night, and the women were wailing.*

G.A: *About the one that your grandfather composed, what were the lyrics, what were the words of the song they were singing?*

Ian: (Asks Guyae and Autae in the BenaBena language, who were in the chorus, and then turns to me and says in prosodic style): *'Many people are moving away to*

Christianity, the church has arrived not far from here and our men are moving to enter the Christian faith. Won't there be anybody here to defend the land?'

G.A: *From the Makia?*

Ian: *From our tribal enemies, yes.*

G.A: *Can you ask them, when was the last time you sang these songs?*

Ian: (Ian asks the elders, they reply directly to me): *1943 some, 1960s for others.* (A heated discussion starts among the elders.)

Ian: *The last time, the occasions that they would sing these songs are when the girls would become women when they first saw their period. Then men would gather there to sing songs, and also when there is a wedding, for happy occasions. They would say who the composer was, and why they sing these songs.*

[More villagers come. A group of children, eager to demonstrate their skills, sing one of their 'playing songs' – see Figure 51].

Figure 51: BenaBena children in song

G.A: *Are there any more songs being composed now, in the village?* [My question causes a heated discussion among elders. Lavax breaks into a song that seems in the same style as the ones before: introduction by a 'leader', repetition by two-three men for the first verse, then everyone present join in].

Ian (translating)**:** *This song was composed when they went over and killed prominent men from other tribe, in February.*

G.A: *In this* [current] *tribal fight?*

Ian: *Yeah, they called the name of their, the guy who seems to get into trouble and say you turn around and see behind you*

G.A: *Tute?* (Tute was the leader of the Glopa tribe).

Ian: *Tute. These men stigmatized the name of the guy, and that's his blood there behind you, see and that mountain is called Fopofiali, so they said turn around and see at that mountain.*

G.A: *There?*

Ian: *Over there* (Ian points at a hill behind the houses).

G.A: *Who wrote this song?*

Ian: *This song was composed after a dream my mother had on what was going to happen, in which my grandfather was talking to her about what would happen, so she mentioned this to the men near, they add the lyrics and they turned it into song.*

G.A: *So, basically, your mum came up with the idea of the song.*

Ian: *She had a dream, and she came up, yeah.*

G.A: *So, who composed it / who set the melody?*

Ian: *A group of boys, them came together, and put this into song.*

G.A: *Well, since I have to leave now do you have any farewell songs?*

Ian: *We don't have any farewell songs*. [Women start arguing with him, talking very excitedly. The men present seem to disagree with them. I see that Ian wants to go – we still have to drive back to Goroka tonight, and it was getting very dark – I could barely see. As we are about to leave, they all break into song].

Ian (smiling)**:** *This is a funny song.* [The song has the same pattern again. By the time the villagers seem to be singing this song, nearly the entire village is here singing and laughing, and more seem to be coming as well.

Heto (to me)**:** *Is quite alright?* [Everyone laughs].

It would appear that for war, marriage and funerals, the BenaBena still composed and sang songs in the same style and manner as their forefathers.

I have been told by Prutson and Ian that customs had not changed much for funerals – apart from the burial and church service which followed, the arrival of funeral guests was as it had been before Christianity. I was fortunate to be part of two funerals: One held in Moweto, another one in Goroka.

From my fieldwork journal: *When we got there without any incident, we jumped off the truck about 200 metres from the village. We formed a parade of mourners where the men with the bows went first (much like a ceremonial guard) while the women followed. The high firepower guys were at the sides, while at the end where the lightly armed ones with machetes and pistols. Everyone had their faces painted black with charcoal mixed with oil. We arrived with full pomp, with the women chanting a song that Ian later translated for me.*

The song was saying:
Pity us women and children,
the men should be the ones burying us,
Now who is going to build our house?
Who is going to mend the fence for our garden?
Who will defend the village?
Pity us women and children

Pity us women and children,
It will be cold tonight and
Who will bring us firewood?
We won't be able to cook our food
But who will bring us food?
Pity us women and children

You should come back to give me food one more time…

At that point the women from the village heard us coming, so with great wails they came out to greet us. They rubbed the (black with charcoal) faces of the men (this was done to show them that their grief was appreciated). At that point my eye caught Prutson crying –this was a man who in the recent tribal wars had shot around forty men, quite a few of them fatally (Mother Rapi's recollection was that he always fought from the front lines). I went over and shook his arm. He said in a broken voice full of tears: *'I knew this man. It was not his time.'*

The women stopped wailing. The men of Kenimaro stood across the family of the diseased and spoke (in BenaBena that was translated to me on the spot by Prutson): *'We are very saddened by this passing* (away of your relative). *You were our cold water* (during the ongoing tribal war, the villagers of Moweto provided the men from Kenimaro with food and water). *Friendship honoured our fathers, and we here now with these gifts for the mourners we would like to continue this friendship* (at this stage the women from our village placed a large blue canvas in front of the relatives of the diseased and put on top large amounts of food: Rice, flour balls, bananas and taro). *We regret your brothers' passing and we will miss him. Was his passing of illness or magic?'*

The brother of the diseased stood up and said:

'We appreciate your visit. We have a good friendship and we would like to maintain it. My brother's passing was of illness, and no revenge is to be claimed.' Everything was very formal – I could even say rehearsed by both parties to show the maximum amount of respect to each other. I, aiming my camera around filming human sorrow was a rather strange sight, but still at least the villagers from Kenimaro highly appreciated the fact that I gave a more universal appeal to their party. We were sat on the side, since other mourning groups showed up and paid their respects in similar fashion. At this point it was that I noticed that the other parties had different paint or plain mud, whereas our party had black faces. I pointed this out to one of the boys who briefly explained to me:

'They're wearing sorrow paint. We are wearing war paint.' (see Figure 52 below):

Figure 52: BenaBena from Kenimaro wearing black 'war paint' on the left. On the right, BenaBena from Moweto wearing earth - coloured 'mourning paint'

The villagers brought us orange cordial in buckets which was handed out in plastic cups, and sugarcane. After we had eaten we waited for more than an hour until our truck came to take us home. During this time I was offered two cigarettes by the Moweto-ans. When the trucks arrived, the brother of the deceased said: *'We thank you for your visit. Even if this is a sad day, we should all go back to our lives. After all, we will all be joining my brother sooner or later.'* The song was the same for both funerals I attended, and I was told by Mopafi that it has remained unchanged from his time. As far as wedding songs are concerned, I will put one down composed by the man whose funeral I have just described above. It was sung to me by one of his female relatives in a tiny hamlet between Siopeks and Moweto: *'Loved one, take out the mattress and lie it down for me to rest. I'm feeling poor and could use sleep'* (meaning death). This song would be sung by the brides' relatives on the wedding day, after the price of the bride had been agreed upon. Unfortunately, the wedding that I attended was not celebrated by the immediate Kenimaro clan, so I was not able to ask many questions regarding the songs out of fear of braking tribal etiquette. From mere observation, they were in the BenaBena language, but did not follow the Leader – 2/3 chorus leaders – chorus form of the songs sung by the elders in Kenimaro, and the wailing funeral song. The wedding songs accompanied energetic dancing and ululating from the bride's family, whereas the groom's relatives and guests remained motionless.

Events like the ones just described made me wonder about the potential usage of the visualisation of music in two-dimensional form. Prior to their adoption of Christianity, the Highlanders' use of sound in instrumental and vocal music had one major purpose: to convey messages to their allies, to convey messages between them, and strengthen the social cohesion of the group through music and dancing in the form of rituals and initiations. As I have demonstrated with the above examples, signs such as icons and symbols were established but did not deploy a written element. If an entire culture bases its communication system on sonic signification, its transition into a written system would bring changes that may not encompass all these sources of communication.

After the arrival of Christianity, those practices that went against the new religious doctrine were eradicated and survived only in memory. During interviews with older members of the community, most expressed the fear that their traditional songs, even their language, would become extinct. The female relative of the deceased who sang the wedding song for me was quite open about it: She said that radio and western music in general were to blame for the fact that young people today do not know any traditional songs or music. She also went so far as to say that in 30 years' time all elements of musical tradition will be completely forgotten, simply because the young people don't seem to care (on this the other participants agreed with her).

During another interview at the Sifu hamlet, I unfortunately upset their leader, Chief Sogo (Figure 53), with my questions. I first asked one of the elders, Heto, why, if he thought that young people should know their traditional songs, did he not teach them to the younger generation. He told me that he did not do so since the youngsters were not interested and the elders thought it did not matter anymore; with mobiles and cars now they had the means to convey messages to their neighbours much more easily than with music. Also, since now they were members of the SDA church, they lacked events or occasions for traditional musical performance. They did not kill pigs to have large feasts any more as they used to in the past, and did not practise the Nama cult any longer.

Figure 53: Heto, one of the elders at Sifu on the left, with Chief Sogo on the right

The younger Chief Sogo was of another opinion, however. He dismissed Heto's comments as a 'lame excuse'. This is what he said, when I asked him about his own opinion:

G.A: *Do you think that people will perform traditional songs in twenty years from now?*

CS: *They won't. Everything will be forgotten because of the new western influence.*

G.A: *If it is important, then why don't you teach the younger children the traditional songs and dances?*

CS: *We should.* He gets agitated, and speaks very fast in BenaBena. Prutson, after discussing matters with Simon, starts to translate:

There are some contributing factors to the present age. The western influence is very big. At the same time the religious beliefs are coming into society. We are starting to gradually forget these traditions. We cannot be the same anymore.

Western culture was the reason why they did not learn any of the 'old ways', ranging from the initiation ceremonies, to village feasts as well as singing and dancing. What the others did not dare to say, the younger Chief spoke out plainly. The elders who were present tried to hush him (maybe because they thought he was being impolite to me), and as a result he got agitated, and left. His opinion mirrored the one from the elderly lady from Moweto. Western 'civilization' gave them much more than they had bargained for, but had changed them forever. The relation between the BenaBena individual and social structure is seen in the schema below:

Social structure→ Culture→ Groups → Individual Agency

This existing social structure was defined by cultural norms broadly accepted by the BenaBena groups, who were made up of individuals that defined their own hierarchy, within their society. The BenaBena as individuals rejected Christianity, as they found it inconsistent with the existing social structure and culture of their groups. The missionaries in turn, found that by approaching BenaBena individually could not accomplish what they hoped to achieve; therefore, they chose to destabilize the social structure and culture (through exposing the Nama cult as a hoax, and

forbidding the tribe to practise music and dance) in order to alter BenaBena beliefs and perspectives.

As a result, local music traditions that came in conflict with the 'new' social structure promoted by Christianity were forgotten. The ones that survived are perhaps doomed to be forgotten as well, as some of the tribesmen told me in interviews.

My viewpoint, however, is that as long as the reasons for the surviving musical culture remain, perhaps traditional BenaBena war, wedding and funeral songs will prove resilient and be set as an exception, or survive by becoming part of the Christianized social structure.

In the perspective of symbolic interaction, the 'freedom' of the BenaBena individuals to direct their own actions in the existing social structure was disrupted by external cultural norms that re-defined the identity of the tribesmen without giving them the chance to adapt first. Therefore, the cycle of symbolic interaction received a major external upheaval through the modification and re-interpretation of the cultural environment, as the status quo of physical objective reality was replaced by the new Christianised version of it. This in turn led to a new perception of the physical objective reality, followed by social interactions which blended the old and the new (Figure 54).

This upheaval brought the BenaBena in contact with a culture which used textual-symbolic means of communication, rather than sonic-iconic ones.

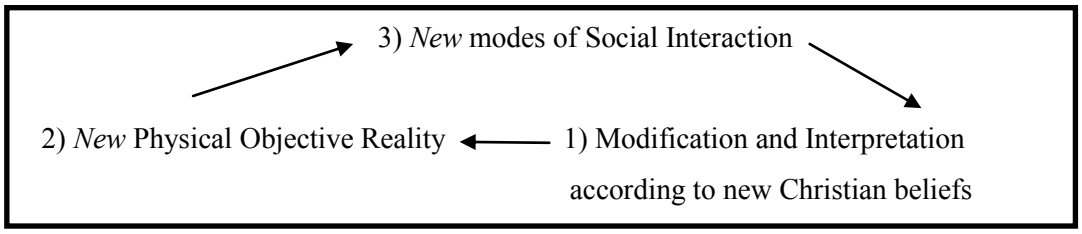

Figure 54: New circle of interpretation

4.17. Conclusion on Chapter four

We have seen that, for all cultures examined, the visual representation of music as it has been presented by participants in the quantitative investigation, is but half of the story; I hope that the interviews and opinions presented in this Chapter have enabled the reader to understand that, although cognitive abilities and capacities determine responses by and large, the final answers given by experiment participants also reflect the influence of intervening culture, and, first and foremost, the knowledge of language literacy as well as any formalised method of visually representing music . Based on this thought, I would like to present the following schematic diagram in Figure 55 which demonstrates a developmental procedure towards the visual representation of sound:

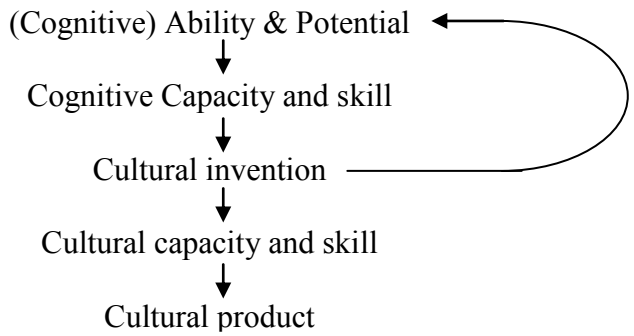

Figure 55: a developmental procedure for the visual representation of sound

By cognitive ability & potential at physiological level I mean those cognitive attributes that enable communication (as presented in Chapter 1.5): memory capacity, ability to combine information, improvisation, expectation, imitation and social cohesion.

By cognitive capacity and skill I mean how well individuals can fulfil tasks at a personal level. I acknowledge that perception precedes cultural input, while cognition is somewhat subject to it – however, with the data I collected and presented here, I believe that it is not cognition alone which is responsible for the visualization of music; I hope to have proven in this and the first chapter that cultural parameters may cause participants to make sense of their environment differently. As I have

argued, the 'invention' of culture creates a different basis for a *cultural* perception of reality, which, on the case of visually representing music in a free-drawing paradigm or pre-determined shapes through multiple choice, is greatly influenced by the acquisition of literacy and also by exiting practices of representing music visually, in the form of musical notation.

In relation to this, cultural invention also determines the system of communication: iconic or symbolic, oral or literate. Cultural capacity and skill determine how well individuals can communicate through their cultural means of invention, i.e. their level of literacy, or the width and depth of their oral tradition. Finally, I have to emphasise that what I received through my quantitative investigation was a cultural product as much as a cognitive one – I hope the interviews conducted and presented in Chapter Four support this case.

In the next chapter I intend to explore how the visualisation of music may transmit and establish culture, in interaction with the surrounding social environment, by using the formalised method of musical representation (musical notation) as an example.

The reader should realise by now that for trained musicians, language and musical literacy appear to have a fundamental influence on their two-dimensional representations of music. Therefore, the examination of BenaBena participant responses, who originate from a non-literate culture, attains key status, as does a more careful examination of literate participants' relationship with the formalised method of representing music, its structural components and its non-musical influences.

Chapter 5 – Discussion: Making Sense of Qualitative and Quantitative Results

Introduction:

In this chapter, I will attempt to provide a possible explanation as to why and how the formalised method of visually depicting music may act as a transmitter of culture and as such interact with the social environment around it. I will go on to demonstrate how participant responses to the 'visualisation' exercises I requested from them (in Chapters Two and Three) strengthen this argument by examining the purpose of visual representation of music in their respective cultures, and the importance and influence of the existing method of depicting musical information visually in two-dimensional form.

I intend to do this by investigating how social parameters affect the survival of formalised methods of musical representation, regardless of their strengths as systems of meaningful communication among their users. In the first chapter I presented the case of Ancient Greek notation – now, by observing material collected from fieldwork alongside with further examples from bibliography I intend to examine how social parameters may also direct notational approaches in form, or even deem them unnecessary for musical communication if they come into direct opposition to the beliefs of a society in question.

5.1. Key points on representation

From the experimental procedure certain key points emerged as to the relationship of musicians and visual representations of music. First and foremost, participants (regardless of cultural background, literacy or type of musical up-bringing) were able to provide invented 'notational systems', as they themselves referred to them, in order to demonstrate sound. This fact in itself could further imply that everyone has

the ability to associate musical sounds regardless of cultural or linguistic background, with some form of visual representation. The meaning of this in extent is that we have solid evidence that visual links *can* exist in relation to music, since a specific and systematic exploration has taken place across cultures with significantly different social and cultural practices regarding music performance and tradition in general. As to the meaning and importance this visual representation holds for current performing musicians, I suggest that this is varied according to the needs of each and every musical society. Although most participants may have been sceptical as to the task I presented them with, all were able to provide me with graphic representations of sound with three exceptions due to mistranslation, even if the idea to represent sound visually was not native as was the case with the BenaBena.

The participant groups, as presented in the second chapter, have been as musically diverse as possible; however, visual representations made their appearance as working guidelines to re-materialize a sound event, and not as mere imaginative metaphors regardless of the culture parameter. The next two sections will focus on participant responses and the strategies deployed by their creators.

5.1.1. On Similarities and Differences

Let us examine the similarities in participant responses provided first, within the framework of invented or pictorial axial (analogue) representation: we have seen that music is able to become associated with visual representations by anyone regardless of cultural or musical background.

The following evidence suggests that some style-specific links (as seen in Chapter 1) between music and its visual counterpart exist: a large number of the entire participant population (regardless of origin or type of musical training) tended to represent sound in a linear, left-to-right axial representation resembling analogue notational systems, with time located on x axis. This could be attributed to a variety of reasons:

i) Musical representation is a cross-cultural human trait that, when depicted on a two-dimensional surface, is represented linearly.

ii) Linear representation of music may have roots in literacy, since the latter provides participants with a timeline of reference and an axis on where to put responses

iii) Directionality of script (H-ltr) could be the effect of Western linguistic script and musical culture (and possibly WSN).

The majority of participants who did not follow the left-to-right horizontal path of representation were either the non-literate BenaBena who opted for an inconsistent abstract pictorial method that could be at best described as executive notation (see Chapter 1), or Japanese masters unfamiliar with WSN and at the forefront of defending traditional Japanese Arts from what they may consider as a threatening expansion of Western culture. This evidence would originally suggest that some language-specific attributes may affect music and its visual counterpart; however, as we have explored in Chapter Four for the Noh masters, it would seem more likely that sociological factors direct responses far more than language traits or possible cognitive variances in their case.

As sociological factors affect literate societies in an intriguing manner, it would be of prime importance to examine alternative methods of organization outside the overwhelming effect that literacy seems to have. Therefore, the seemingly unique case of the BenaBena will be presented below as an example of a non-literate community coming to terms with a new form of musical communication.

5.1.2. Imaginative abstract pictorial responses: an innovative method of organisation using iconic representation

If this thesis were based on quantitative material alone, it would have been relatively easy to conclude that the visual representation of music is surprisingly common across cultures, as analogue, H-ltr axial representation seems to be the norm. These results could provide food for thought for other scientists who investigate aspects of music cognition and behaviour and perhaps lead them to extract conclusions of their own, considering perhaps underlying mechanisms of human perception of sound.

However, a proportion of the responses provided by the BenaBena community, which were overwhelmingly abstract-pictorial or even 'imaginative', seem to indicate otherwise. For the reader who has taken notice of the absence of examples from the BenaBena tribe in Chapter Four, I hope to have kept his/her interest and increased his/her anticipation for what is to follow. Responses which were classified as pictorial and abstract-pictorial from the United Kingdom, Japan and the literate Highlanders in Port Moresby, represented a minority in comparison to the consistent invented analogue responses from the same groups which followed axial representation.

In Figure 57 we can see representations of pitch (based on the stimuli from Figure 56), from the pilot group and the traditional Japanese group using 'invented notation', Figure 58 shows representations of pitch in pictorial manner, while Figure 59 represents pitch in an abstract pictorial iconic manner. The examples presented here are based on the following stimuli:

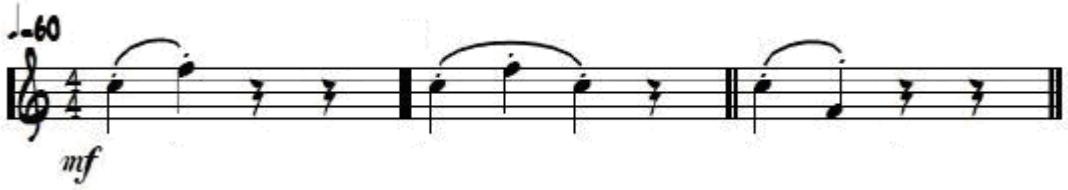

Figure 56: Pitch variations.

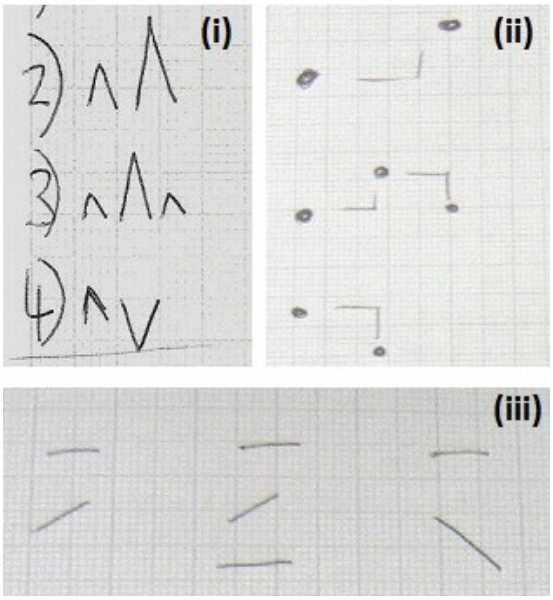

Figure 57: Examples of three different systems.

(i) Drawn by a British participant (ii, iii) drawn by traditional Japanese musicians. For (i) and (ii), time is represented horizontally with a Left to Right direction, and pitch variation is shown through vertical variation. No elements of WSN have been used. Example (iii) represents the passing of time a vertical axis, Top to Bottom. Pitch variations are represented by the inclinations of the strokes.

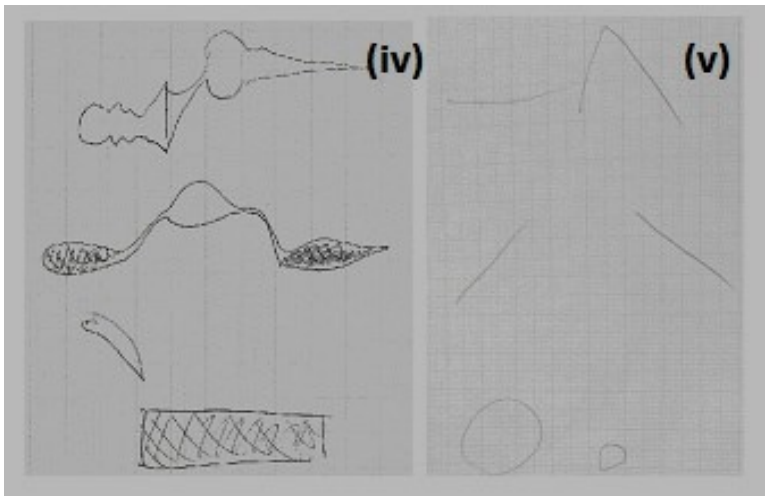

Figure 58: Examples of pictorial notation.

Examples of pictorial notation by a British participant from Group A (iv), and by a Japanese participant (Group B) (v). Although the drawings follow Cartesian representation (H-ltr), they are not internally consistent, and are therefore classed here as pictorial.

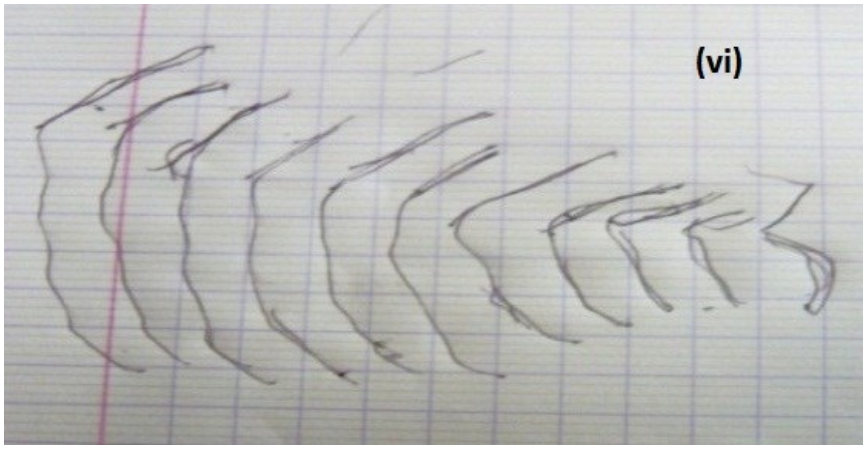

Figure 59: Abstract pictorial representation

This example (vi) illustrates the category of abstract pictorial, which represents auditory stimuli in iconic manner. The BenaBena participant in this case has used this image to represent all pitch stimuli. The depiction of the sound events does not involve a timeline. According to the participant at the follow-up interview, all of the flute sounds were represented by the lines drawn above.

In Figure 60, we can see some additional BenaBena responses for representation of most pitch stimuli, while Figure 61 demonstrates some examples of responses for initial pitch and duration stimuli:

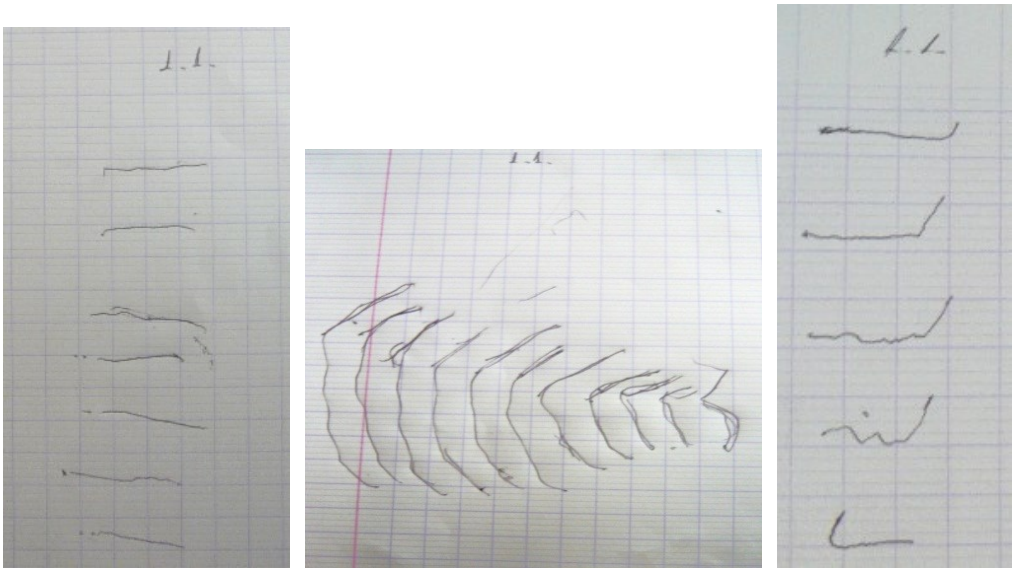

Figure 60: BenaBena representations of pitch

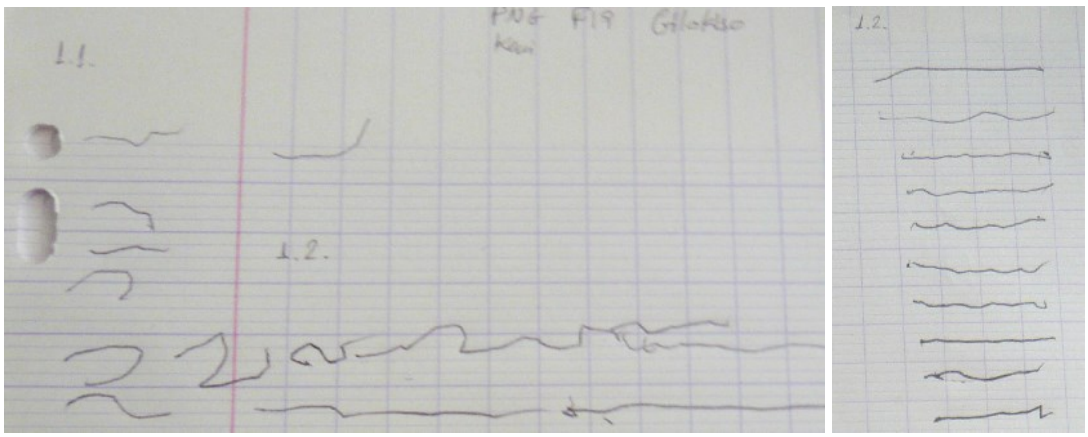

Figure 61: BenaBena representations of pitch and duration

For attack rate, two representational styles emerged depicting all variations which are demonstrated below in Figures 62 and 63:

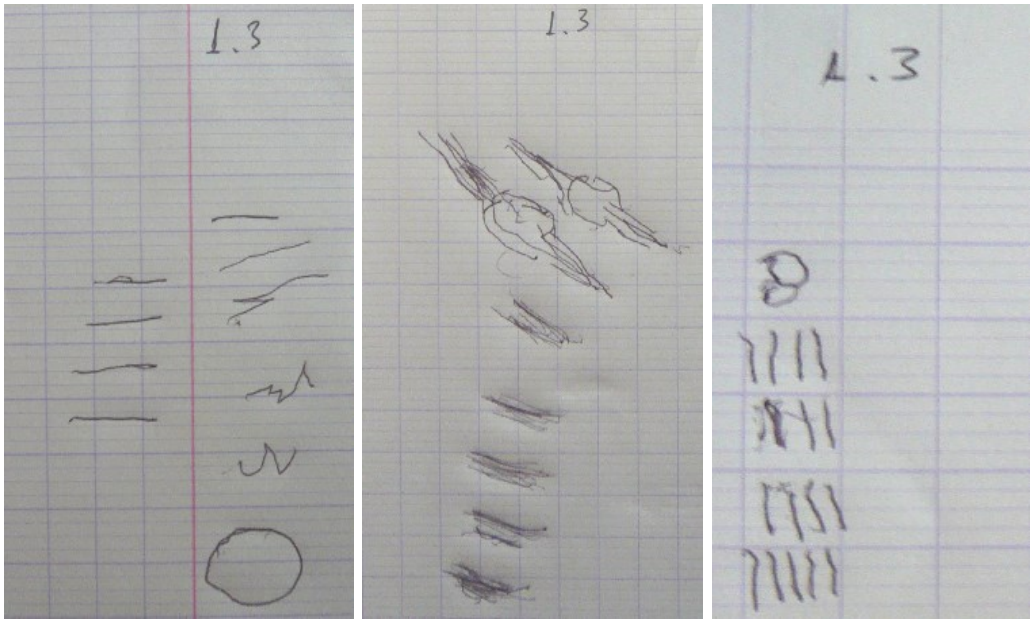

Figure 62: first representational style of attack rate among the BenaBena

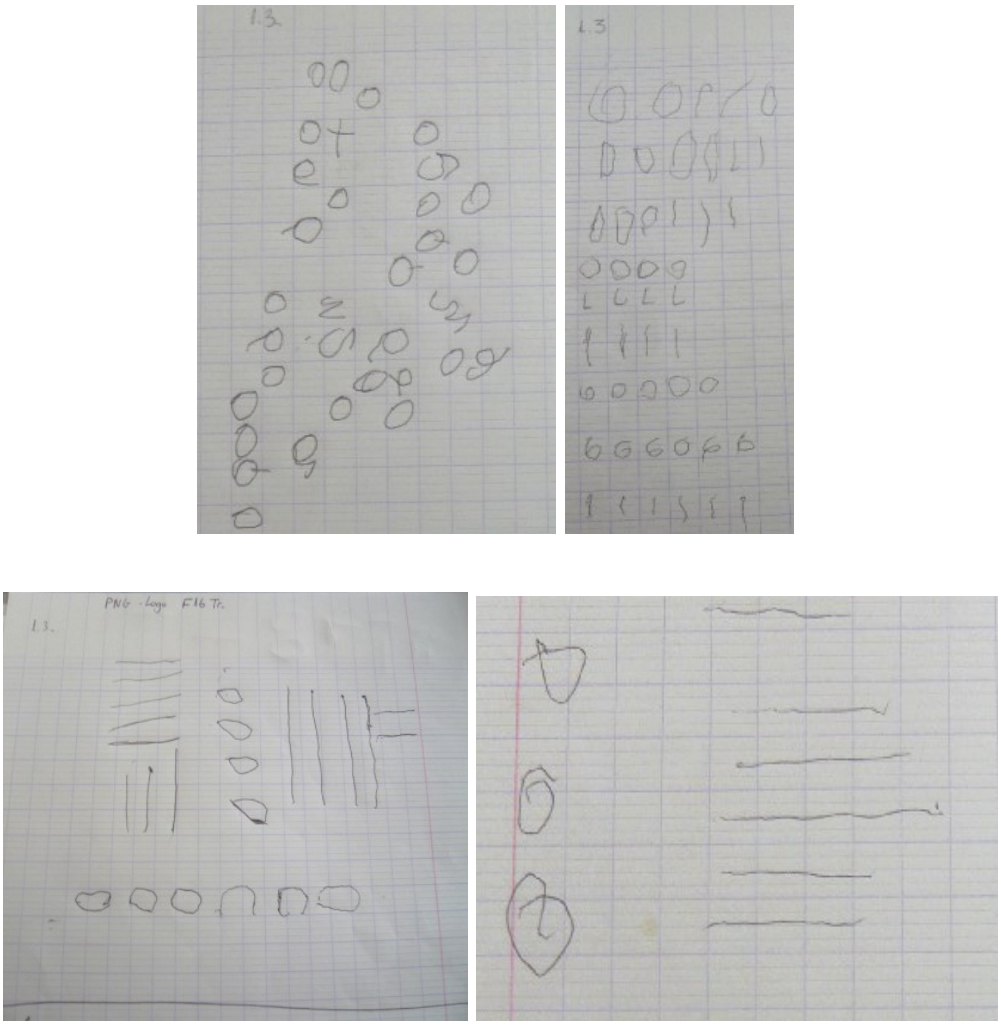

Figure 63: second representational style of attack rate among the BenaBena

It would make perfect sense to assume that the representations of pitch and duration on Figures 60 and 61 represented an analogue strategy of representation. However, the similarity of visual responses either within the moderation of one parameter (pitch, duration and attack rate) or across two parameters (pitch and duration) could not be justified by mere observation.

Subsequent interviews with the BenaBena revealed the following: the participants were not indicating variations within the stimuli but rather perceived and applied to the letter the guidelines given to them[220] (usually after discussion with their peers), and themselves invented a symbolic method of representation appropriate for the task. In order to depict 'variations' in attack rate, participants deployed circles to

[220] 'Represent the auditory stimuli visually, so that if another member of the community saw these they should be able to connect them to the sounds.'

stand for drums, while lines next or on the circles indicated the action of hitting the drum, or the number of strokes.[221] Small variations in the length of lines next to the circles indicated (perceived) variations in loudness.

As for pitch and duration, participants attempted to indicate that a flute was playing, rather than attempting to indicate specific variations between the sounds events. The similarity of this method and the subsequent consistency in responses may be attributed to the methodology they followed: First, after the initial introduction of the idea to the BenaBena, I found that they would discuss the notion of sound representation among themselves trying to reach some sort of consensus outside (before) the experiment took place. Second, when providing responses together, participants would openly discuss answers between them, often arguing widely about the appropriateness of their responses.

5.1.3. Analysing the reasons for similarity of responses among the BenaBena community

In order for musical communication to take place, cultural agreement is necessary amongst at least a few members of a community on what is perceived. This idea may be thoroughly seen among the BenaBena participants: although the directions were that each member would provide responses on their own, as mentioned above, they often debated their responses both for Part I of the investigation, where they provided responses freely, and Part II for the forced-choice design.

However, the fact that the few members of the BenaBena that opted for a systematic methodology in providing abstract-pictorial responses could only suggest universality among communities who are just beginning to create a visual symbolic dictionary of sonic information. As for the minority of participants who represented a

[221] BenaBena, as most of P.N.G. highlanders, use both hands and sticks to beat drums. On one occasion during the Mt. Hagen cultural show in 2010, I noticed a female member of the Koge tribe beating her drum with an empty plastic bottle. When I asked her why, or if this is common, she answered that she just came up with the idea when her water bottle was empty. On top of this very pragmatic reason, she also found the resulting sound 'better'.

Cartesian methodology for the task (x-y axial representation), it could be argued that they were responding to task demands, i.e. what they thought that I as a westerner perceived as 'correct', and mimicked western script which they had undoubtedly seen in Goroka.[222] Also, these responses do it encompass another key aspect: the idea to present music with a visual image came from me and was not native to the community. It has to be kept in mind that although participants provided responses, this does not mean that they would deploy written iconic or symbolic directives for their everyday musical communication, unless it was already a part of their musical culture. We have seen from the first chapter that when it comes to expression and comprehension of musical meaning, there is no agreement amongst ethnomusicologists and music psychologists: members of the latter group have suggested that, since music is a form of communication, specific musical sequences may be universal. At the same time, members of the first group have suggested that universality in music may exist (as in all cultures have music, or a statement equally basic) *but* in a common cultural context. Social variations cause music to be manifested differently, as elements of culture are manifested differently amongst social groups. Examples can be found both at the creative stage of music, as in what constitutes a 'good' composer / performer,[223] and also in music comprehension, as presented by Tagg.[224]

Apart from the fact that a well-established system of symbolic communication such as any form of literacy and musical notation was lacking, this does not mean that the BenaBena are not able to communicate non-verbally. If musical representation is defined as information in time, two key elements seem to affect it: the representation of time or its absence, and the pictorial perception of shape. For shape, Deregowski's work seems to be also valid for musical representation as seen amongst the villagers, which was also in perfect accordance with the guidelines provided to them: depict sound visually so that it can be understood by your peers.

[222] Though I am inclined to believe that this is not very probable; even if the participants had seen linguistic script, I would assume that they did not acquire instant familiarization, particularly regarding the directionality of script.
[223] Nettl B. (1956). p.11. Also Blacking, J. (1973), pp. 3-31.
[224] Tagg, P. (1993). *Critical Quarterly* 35/2 (ed. S Frith, Oxford), pp. 54-98.

Therefore, the visual representation of music in a non-literate community would deploy culturally defined 'appropriate' symbolic references in order to fulfil the task despite the fact that musical notation is non-existent. These culturally 'appropriate' references focused on musical parameters that either seemed to matter more to participants, or parameters that could be represented without creating confusion as to their meaning; and as a result, variations between sound events within a specific category of musical stimuli (such as pitch variations) were put aside in order to maintain clarity in symbolic reference, within the directives given to participants by myself. Just as music would not reach a stage of complexity that would permit individual 'talents' or virtuosi to emerge, the prime focus of the visual representation of music at its starting stage within the directives of the investigation among the BenaBena aimed at social cohesion, rather than elaborative talent in 'drawing' sounds.

5.1.4. Interpretation, originality and performance practice.

In the BenaBena society, when elements of music cannot be bound by syntactical practice other than the cue leader of a singing or dancing ensemble (as is common in Papuan Highlands) this would deem musical representation through graphic means not only unnecessary, but also out of any cultural context. Papuan melodies could be easily transcribed in that they are primarily pentatonic, and with a little practice and patience, so could their rhythmic elements of their songs and dances. What would be the potential use for them though, since all elements of a song (pitch, melody, tempo, number verses and repetitions, and even lyrics) are decided by the group leader who 'teaches' *his* version on the spot and on the spur of the moment, as observed in Chapter 4, a version that will change at the next performance when sung by another group leader or even the same person to reflect on a new situation? How could possible directives of this performance be set on paper for reproduction, if it is meant to be different every time?

For western researchers the answer is obvious: preservation and cataloguing at least. For highlanders of Papua New Guinea, where a key element of the song is change,

this would not rank very high – not now, and not in the past. What's more, the new versions of songs or dances are not considered as free improvisation, which, as I have seen, is not particularly welcome in group sing-sings, as it tends to break the unity of the group. If in the Western world of 'art' music hardcore musicologists and performers struggle to draw Meaning from the 'correct' interpretation of one method of visualising music in two-dimensional form, it is because there has been too much effort to introduce music as an autonomous product in concert halls, where music is performed for music's sake and outside the scope of cultural practice, therefore attaining a level of religious ritual. This in effect leads to the belief that the 'performers are *essentially* corrupters - deviants, in fact'[225] and to what Peter Kivy referred to as 'composer worship'[226] – and in effect as far away as possible from the BenaBena notion of finding and establishing the sense of community through performance by drawing meaning as a collaborative process, regardless of who composed the musical work. On this opposite side of the BenaBena perspective, where no concept of a musical work exists apart from the action of performance for specific occasions, the idea of western 'art' music in the west in its most idealized form is out of touch with the people not initiated in its world: '*Western classical music embodies a kind of society that does not allow for mutual participation of all peoples because it is based upon works, not interactions*.'[227]

5.2. Culture as the determining force of music and its visualisation

As Bruno Nettl said of musicians regardless of their origin or performance tradition, '*one does not simply 'sing', but one sings <u>something'</u>.*[228] In order to keep this *something* close to the person who first came up with its idea, free iconic

[225] Taruskin, R. (1995). *Text and Act: Essays on Music and Performance* New York: Oxford University Press, p13.
[226] Kivy, P. (1995). *Authenticities: Philosophical Reflections on Musical Performance* Ithaca: Cornell University Press, p.278.
[227] Small C. (1998). *Musicking: The Meanings of Performing and Listening* Hanover: Wesleyan University Press, p.11, in Cook, N. (2001). Between Process and Product: Music and/as Performance, *Music Theory Online,* Volume 7, Number 2, April.
[228] Nettl B. (1983). *The Study of Ethnomusicology: Twenty-nine Issues and Concepts* Urbana: University of Illinois Press, p.40.

representation of music gradually became formalised to highly specified systems of symbolic nature, such as western musical notation. Western musical notation gradually started to change roles from a highly specified tool of communication to a sacred *S*core, and the idea of the 'Work concept' became sacred, sometime around the start of the 19th century when music was removed from its social functions as presented in Chapter Four. This transformation created the concept of 'the Work' for art music. However, such notions of highly specified systems of symbolic communication attaining the status of sacred text are not restricted to the west.

The varying importance attached to the visual representation of music by its users seems to be a cultural matter - not only in the west, but also in Japan. The score in Noh theatre is not to be taken lightly since everything is painstakingly notated (all melodies and lyrics of the eight-member *jiutai* (chorus); the four *hayashi-kata* (musicians); the two *kōken* (stage hands); even the time beats counted out loudly by tsuzumi drummers as reference for actors' movements on stage)[229] acting as a 'sacred' text, the musical work *as it should be* in its unchallenged form. Nevertheless, in reality, it is used only as a very brief mnemonic device, as David Hughes's work attests[230] and as I have seen for myself and presented in Chapter Four: notation is seen as *supplementary* for teaching the no-kan;[231] the tradition is primarily oral, and formal visual representation of music does not direct musical performance practice.

The perception of music and music-making is socially bound, and aesthetic choices related to music are both created by and in turn create groups varying in class, beliefs and values[232] as I have indicated at the end of 5.1.4. The written aspect of music also falls into this pattern. Apart from a notational system's ability to represent music in written form, it is influenced by altering sociological perspectives on music as we have examined with AGN in the first chapter. Asian systems of music representation

[229] Fujita, T. (2008). Nō and kyōgen: music from the medieval theatre. In *The Ashgate Research Companion to Japanese Music*. Eds. Alison Tokita, David W. Hughes. SOAS Musicology Series, Ashgate, pp. 127-144.
[230] Hughes, D, W. (2000). *British Journal of Ethnomusicology,* Vol. 9, No. 2, pp. 93-120.
[231] the flute of Japan's Noh theatre
[232] Bourdieu, P. (1984). *Distinction: A Social Critique of the Judgement of Taste*. Harvard University Press.

in the past prior to the expansion and dominance of WSN and in extent, western culture, followed a specific philosophy in representation, depicting and reflecting society's beliefs at the time of their creation.[233]

During my interviews with the precious few Noh music teachers who agreed to see me I witnessed the rarest of my visual representations for Part I: invented analogue notations moving vertically along the page, which goes to prove that although musicians (even Noh Masters) who use scores running vertically along the page think in a horizontal left-to-right manner, they would retrospectively try to alter their responses to look like traditional Japanese musical texts. By limiting the amount of time for responses among participants I thought I would be able to see behind the curtain of socially constricted visual representation. I discovered that from the majority of monolingual Japanese, less than a handful represented time vertically in Part I; the ones that did were masters of their respective art.

Though I could be wildly speculating they may have been able to overcome any urge to use a horizontal left-to-right representational method, something that their monolingual counterparts did, in order to provide responses that would match their conscious beliefs. From all other groups, only one participant seemed to demonstrate similar behaviour. C. Y. a professional soloist from the pilot group was somehow able to use WSN flawlessly throughout the entire first part, notating at a speed that simply could not be expected. Although specificity was not expected nor requested from the participants, C.Y. provided me with a full notational score of the entire first part,[234] as part of which can be seen below in Figure 64. Compare with Figure 65, where the auditory stimuli varying in pitch may be seen.

[233] Kaufmann, W. (1967). Indiana University Press, 1988, pp.1-5.

[234] Suspecting that C.Y may possess perfect pitch, I contacted her long after the interview. She claimed she does not.

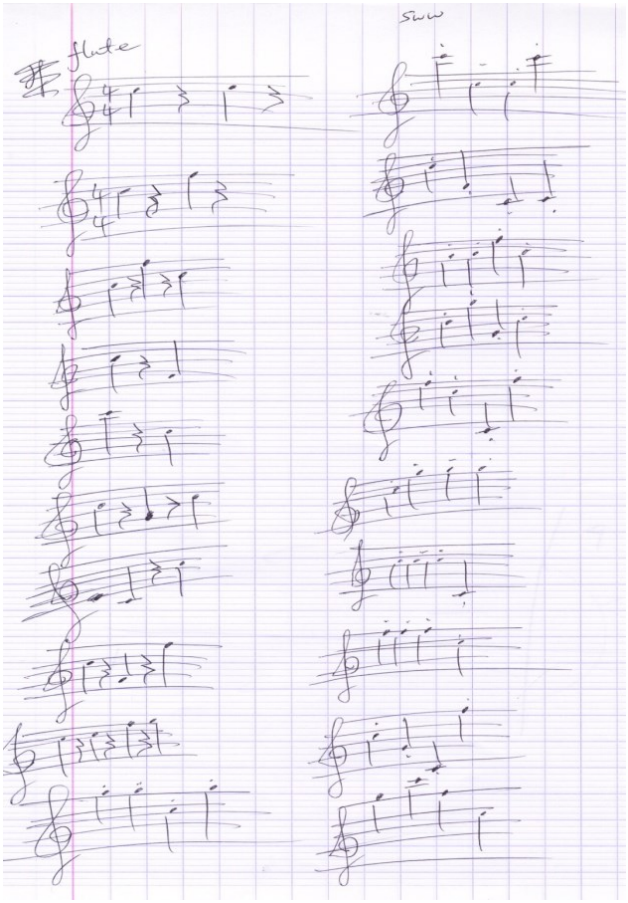

Figure 64: C.Y.'s score for pitch variation

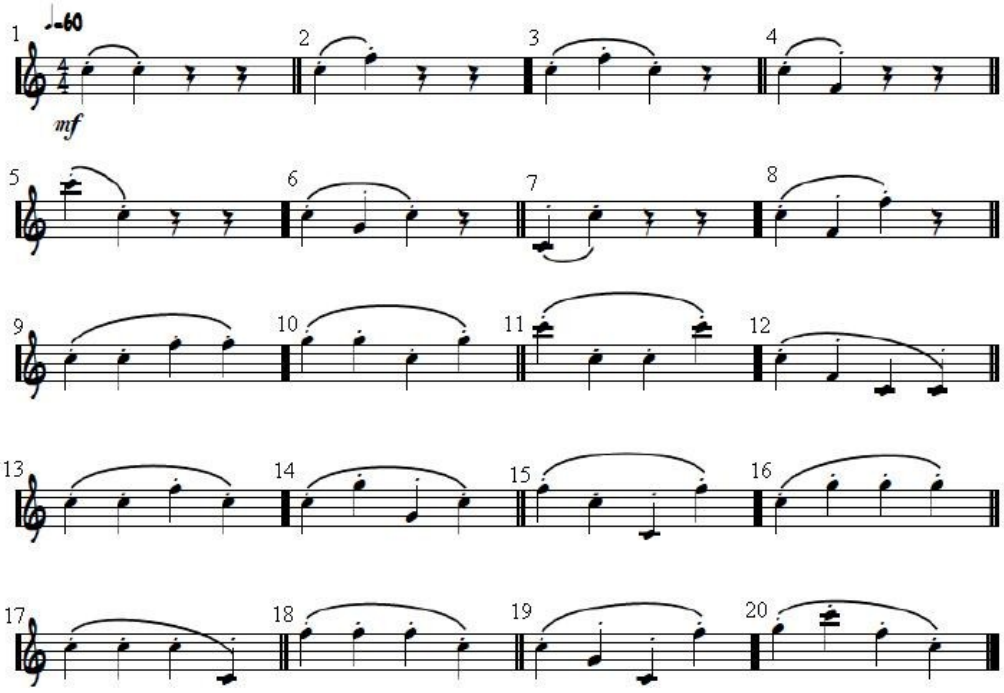

Figure 65: Auditory stimuli for pitch variation

Compared to the modes of representing literacy (pictorial, phonetic and everything in between), music potentially has a wider variety of representational means / signs to manifest itself, particularly in a free-drawing paradigm and not involve a formalised method of symbolic musical communication. C.Y., and the Japanese Noh masters trying to change their responses, could have opted for the much easier option of invented or pictorial notation. However, they chose to provide responses that could only be explained as a conscious manifestation of their beliefs of how music should appear visually: in the form of the representational system to which they had been acculturated, since this, according to them, would have been the only correct way. Therefore, it would seem that formalised musical representation in the form of notational systems plays too important a role not to be addressed in this thesis, or any piece of work dealing with the representation of music amongst trained musicians who have been exposed to it. If this sounds rather restrictive, let us think how performers in literate musical communities show autonomy. The most important difference between any score and its realization in performance is the regulation of time: firstly, performers create deviations from the composer's specified indications (by applying rubato, among others) and secondly introduce small deviations on dynamics and perhaps timbre and use of the sustain pedal (for pianists). These deviations can either be the result of rehearsals, so (in case of large ensembles) they can take place on a large scale without having the work collapse in itself, or be spontaneous, as we have seen earlier in the performance of a Jazz standard. Observing how established cultural norms determine visual representation on graph paper may not be the ideal strategy in order to realize how music is manifested visually. Perhaps it is necessary to examine the question of functionality and how it may come to shape musical representation.

5.3. Function and perspective

The relationship between the proposed notational system and the underlying philosophy of the music in question is the key for unlocking this relationship. I had discussed in 1.6 Seeger's two classifications of musical notation: prescriptive and

descriptive,[235] where prescriptive notation can be defined as '*a blueprint of how a specific piece of music shall be made to sound,*' while descriptive notation is '*a report of how a specific performance of any music actually did sound.*' This separation works when trying to locate distinguishing factors between Western Standard Notation (primarily a prescriptive system) and notations originating from Asia, since the latter appear to be descriptive in their majority.[236] Seeger's separation in descriptive and prescriptive is probably not hindsight as to how musicians of any culture perceive their music notation, since he fails to take into account that notational systems (regardless of their origin) may contain elements both prescriptive *and* descriptive, as well as directional signs. Examples are early plainchant, Shōmyō chants and graphic scores which fit the description of both terms equally well. As for the results obtained from the experimental procedure, although the directions left room to the participants for unrestricted visualization, and despite the fact that in reality all responses were descriptive in nature (since they were created a posteriori from the auditory stimuli, trying to represent the latter visually) most could have easily been the basis for the sound events themselves. The only notable difference came from the non-literate participants, who opted to provide descriptive notation in Seeger's terms. Instead of trying to force participants' responses into fixed templates, we have to keep in mind that for all intents and purposes, these are separations made from a Western perspective, and may not take into account that non-literate participants from any background may separate signs (direct reference to object: an image of a fire means fire) from symbols (indirect references to objects: red means fire). Therefore, prescriptive analogue notations would not be expected to emerge naturally – and indeed they did not, as participants opted for pictorial / abstract-pictorial representations of pitch as seen in 5.1.3. The tendency of comparing occidental notational systems (descriptive in their majority) to WSN (prescriptive in essence) has led western scholars in the past to dismiss other systems not based on the principles of WSN: '*as a rule, musical notation generally does not exist for non-European music'* states Brandl.[237] '*All advanced civilizations are based on written*

[235] Seeger, C. (1958). *The Musical Quarterly*, Vol. 44, No. 2 (Apr., 1958), pp. 184-195.
[236] Kauffmann, W. (1967). University Press, Bloomington, London.
[237] Brandl, R.M.(1985). Probleme und Chancen der Vergleichen den Musikwissenschaft, *Musicologica Austriaca,* vol. 5, pp. 7-35.

sources, however only the Western world has fully cultivated and spread the written form of music, i.e. musical notation' Wiora proclaims.[238] Perhaps the wealth of Chinese notational systems (Guqin in particular is in existence and has been in wide circulation since the Tang Dynasty 618-907 A.D. until present)[239] eluded their attention. A notational system cannot be judged if it applies a different functional strategy in order to materialize music on the score, particularly when it seems to be working well for the performers.

5.3.1. Function and society: transforming sound into image

Continuing the above argument, we should be very cautious in attributing a lack of analytical or intellectual capacity to notators of other times and cultures if their notations fail to correspond to our own standards of selectivity or precision in certain directions. To arrive at a formalised symbolic method of representing music visually in the form of a musical notation system at all implies a far from primitive outlook; Ancient Greek and Chinese theorists who developed the first notational systems seem in fact to have been characterized by no lack of analytical capacity, but rather by intellectual over-activity. The only requirement is to make the first step in the mind: sound can be represented visually in a two-dimensional form such as paper. This step had not been taken by the BenaBena elderly musicians, but knowing that such a step is possible made it possible for me to obtain responses from them, unlike my earlier attempts with the Kalash tribe which failed. Had I being convincing enough in my arguments with the Kalasha participants taking part in the pilot investigation that such a step is possible, the project might have taken me to Pakistan instead of Papua New Guinea. However, there may be another reason: metaphoric attribution of representing sound visually is common in many Papua New Guinean cultures through the transformation of performers into (primarily) birds, as we have

[238] Wiora, W. (1961). *Die vier Weltalter der Music,* Stuttgart, Verlag W. Kohlhammer, p.111, in *Arab Music and Musical Notation*. Ed. El-Mallah, Issam (1997): Hans Schneider Verlag. Tutzing, p.18.
[239] The earliest form of writing qin music down was created by Yong Men-Zhou during the Warring Sates Period 480-221 B.C. See Xiu, Hai-Ling (2000). *Historical Data of Ancient Chinese Music,* Shi Jei Tu Shu, Publisher: Xian.

seen with Feld's Kaluli transformations into birds in ceremonial song, and the BenaBena bird whistling used as personal identities during tribal fighting and hunting. Although this may not mean that sound may be represented visually in two-dimensional form, it does provide participants with the notion that sound may be represented visually. For the Kalash, who are herders, transformations of this kind do not involve sonic imitation as their primary element, but movement: men / women shout 'we confront!' as they charge towards the opposite sex in energetic dancing, imitating rams. It would appear that nature in traditional societies is dictating sociological approaches to music and dance, and excluding notation as something unnecessary: The Kalash, just like many P.N.G. tribes, were also an isolated non-literate pagan community of three thousand herdsmen in a sea of Muslim nations with different languages, striving to keep their customs and traditions alive. They did not need written language or any formalised symbolic system to communicate between them, as they all lived in very close proximity to each other.[240] Only now, due to the outside world's pressure, do they see the necessity to learn how to write their own language using Latin characters, so as to differentiate it from Urdu (which uses an Arabic script) and safeguard it from being lost. I believe that given time, they would probably do the same for music provided that they find out by themselves the potential values that notation may have as a mnemonic, teaching, archival device, or whatever purpose the Kalash see fit to use it, if at all.

To best come to terms with the notion of the transformation of sound into image, we also need to accept that music as performance (regardless of the occasion or number of performers) is a social phenomenon. Especially in the case where music is still highly connected to religious ritual, it would mean that performers would reproduce socially agreed forms of expression. If the musical score is not a previously-agreed-upon social convention, then it would make perfect sense that the BenaBena argued widely about the representation of the sound stimuli on paper, debated the task I presented them with on their own, and came to 'socially agreed-upon' representations before coming to 'carve sounds' on paper with me.

[240] The unique example of Rongorongo proto-script on Easter Island is one of the few exceptions of literacy arising in a small isolated society. As with all early writing systems, oral history suggests that only a small elite were literate.

As we have seen with Tagg's communication model, when society does not have any symbols ready to manifest meaningful communication, it has to invent them so as to keep the communication…meaningful.

5.3.2. How society determines function

Since we do know that formalised systems of musical communication exist outside the Western world and play a role in non-western music, Wiora's and Brandl's statements presented in 5.3.1 cannot be accepted as they stand. Back to notational philosophy, Seeger's comments below (from 1958, when the field of music perception and cognition was still undeveloped) give us an idea of how music *is* to be represented visually on paper through notation, regardless of whether it is descriptive or prescriptive:

> Within the incomplete frame of the two-dimensional page, both symbolization and lineation depend upon certain graphic conventions of obscure origin. One, identification of elapse of time with occurrence from left to right on the page, possibly borrowed from speech-writing, underlies both factors. Another, identification of height in pitch with height on the page underlies some symbolic and all linear music-writing. Uniform vertical coordinates for elapse of time (indicating tempo) and uniform horizontal coordinates for height of pitch form the basic chart for the most recent developments of linear music-writing known as 'graphing'.[241]

Seeger points out that the '*identification of elapse of time with occurrence from left to right on the page, possibly borrowed from speech writing',* is present in WSN. Similarly, Chinese and Japanese notational systems usually follow a right-to-left vertical pattern mimicking their written language at the time of their creation.[242] However, they do not follow Seeger's description throughout, since the systems are

[241] Seeger, 1958, p186.
[242] Modern Japanese writing today does not always follow the traditional right-to-left vertical format of kanji which originated from China. Since the evolution of the kana scripts which are syllabic alphabets, directionality may be in left-to-right horizontal fashion similar to Latin scripts.

not in an analogue fashion as seen in Chapter 4: they are usually alphabetic or executive, where alterations in pitch are not represented in a dimension, but as different symbols.[243] Additionally, if auditory representation in any form is absent from the society, there are no set norms as to the directionality of script[244]since responses are not placed on a time axis which is particularly true as we have seen in 5.1.2 for the BenaBena.

Another key point is that the majority of literate participants tended to provide visual images of sound of their own creation, without necessarily deploying notational elements. This way some of the resulting representations are surprisingly familiar among groups of different cultural backgrounds, as also seen from the various figures presented in Chapter Three. The reason behind literate participant similarity is the positioning of sound events on a time axis, which was absent only from the non-literate group, suggesting that similar musical backgrounds could provide visual representations with common functional characteristics. It could be implied that without the cultural/musical aspect of notation or written text it would have been more difficult for literate participants to provide functional responses. To further support this argument, participants (regardless of cultural upbringing in this investigation) unaccustomed to western music (and its formalised method of depicting musical information through notation) tended to represent sound in a pictorial manner at a higher percentage than participants exposed to western music, regardless of the variable parameter, as seen from the tables in Chapter Three. Symbolic representation of music at the moment of its creation follows society's norms of representing sound in terms of depicting information, depending on its location. There is no question as to whether descriptive or prescriptive systems are better; the answer is the ones that suit the needs of the musical society compatible with their culture they are located in are the best. As long as the purposes of the performers are met, the score seems to be rather safe as it further evolves and develops to satisfy their needs.

[243] For an example on kobo notation, see Wade, B. C. (2005). *Music in Japan: experiencing music, expressing culture*. New York; Oxford: Oxford University Press, pp.74-75.
[244] Cross-cultural variances between Western and Eastern participants have been the study of linguistics as well, as shown in the first chapter.

5.4. Ownership, originality and authenticity

Originality and authenticity are often mistakenly associated with ownership and copyright. Although western 'art' or even pop culture may have assumed, in the past, that traditional societies have no notion of ownership or copyright, this is not true. Even as far back as Malinowski's fieldwork (1922) among the Eastern Papua islands, Malinowski noted transactions that could be described as paying copyright to song owners:

> The other type of transaction belonging to this class is the payment for dances. Dances are 'owned'; that is, the original inventor has the right of 'producing' his dance and song in his village community. If another village takes a fancy to this song and dance, it has to purchase the right to perform it. This is done by handing ceremonially to the original village a substantial payment of food and valuables, after which the dance is taught to the new possessors.[245]

This, in sense, and as I have witnessed among the BenaBena, is song ownership. By no means does it suggest that performers from other clans or villages are excluded from singing specific songs, but it would suggest that they are not the originators of such songs. When the BenaBena would sing a song that is not theirs, they would announce it as such: '*Now this song is in the Goroka language from the Makia tribe. It was composed for the peace between them and us,*' suggesting that although a/the song is known to them, they claim no authority or ownership in its interpretation. Japanese traditional musicians and guilds went to extremes to protect their performance practice, using highly codified notation texts, familiar only to specific elite musicians within each guild, as we have seen in Chapter 4.7.1 and 4.7.2. As for the western world, where notation can be used to claim copyright, could we indeed argue that there is no 'original' version of the score? Nicolas Cook gives the example of Beethoven's Ninth Symphony, claiming that there is

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[245] Malinowsky, B. (1922). *Argonauts of the western Pacific; an account of native enterprise and adventure in the Archipelagoes of Melanesian New Guinea.* London: Routledge 7th print 1966, p.186.

> … [N]o such thing as Beethoven's text, except as in interpretive construct; there is an autograph score, there are a few autograph parts and a larger number of non-autograph ones, and a variety of copyists' scores, but all of them contradict one another to a greater or lesser degree. And to see this as the kind of transient difficulty that can be put right by a proper critical edition is to miss the point: Herrnstein Smith would say that the *Urtext* editions of Beethoven's symphonies that are at last beginning to appear do not replace the earlier texts, but just add new ones.[246]

Therefore, a musical piece finds its place between its musical notation and the action of its performances. I support that the originality of any musical work is not to be found in its respective score, but in its performance in a society that finds it still culturally significant enough to ask for its interpretation. This statement would lie heavily on the minds of the western composer and the 'ideal' classically-trained performer (as pointed out humorously by participants in my pilot group from the United Kingdom) who is focused on originality and authenticity, always aiming to '*keep himself true to the score':* if, as it is the case with traditional music, there is no proven original version of a song, how can a performer be true to it? Alfred Lord (in Charles Bernstein) mentions: *'Once we know the facts of oral composition we must cease to find an original of any traditional song. From an oral point of view each performance is original.'* [247] As also seen in Chapter 5.1.4, if in a society each performance strives to be original, what would the use of a score as a mnemonic device accomplish? This suggests that a society may not develop music notation because it would contradict its system of beliefs: instead of broadening knowledge, it would make it a privilege of those who would be able to read the code and exclude everyone else.[248] This

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[246] Cook, N. (2001). *Music Theory Online,* Volume 7, Number 2, April, p.8.
[247] Bernstein C. (1998). *Close Listening: Poetry and the Performed Word,* New York: Oxford University Press, p.10.
[248] At this point it would be worthwhile to return to the idea of notation as ideology rather than as a tool of communication; this tool in not needed among the BenaBena who base their musical communication on oral transmission; however, in western classical music, notation *is* needed. The following is another part of my personal communication with Dr. Elaine Kelly: 'Let us consider in this context the growing separation between composer and performer over the last two centuries: composers of the Baroque and early classical era usually conducted and performed in their own ensembles, and while they might fully notate the passages for the other musicians, they often did not write their own parts out in full, as they were there – therefore, it was not considered necessary. As the performer and composer ceased to be one and the same over the course of the 19th century, however, it

situation may be acceptable for Western culture where not everyone is expected to read notation and perform in orchestras, but it would create significant distress to the highly inter-social nature of Highland sing-sings of Papua New Guinea where everyone is expected to take part in musical activities. By making the musical work part of its current performance culture without a score, a society incorporates the 'original' piece into its oral tradition. The relationship of musical notation and its visual connotation in society will be the subject of the next section.

5.5. Visual representation of music as reflection and creator of meaning in society

In the results obtained from all participant groups, I noticed that none of the participants provided responses using text (words) other than those who used it as accompanying directives when using WSN as a method or representation. Mayumi Adachi, an associate of Jeanne Bamberger found this intriguing (in personal conversation at the ICMPC 2011, Rochester NY, 2011) as one of her current studies with children on syllabic directives for music suggested otherwise. This implements that either the formulation of my directives towards the participants forbade such an act (it did not) or participants – regardless of culture or musical background from our pool – did not associate the representation if musical stimuli with textual words. Given more time between the alterations of sound events, they might have provided further directives deploying words. However, none did so, nor did they attempt to do so.

On my directions, participants visually represented sound in a way that they thought is potentially meaningful to their society – thus for the pilot group, analogue representation prevailed, while for Japanese and Papuans, pictorial representations seemed to function equally well. Codal Interference as presented by Tagg in Chapter

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became increasingly necessary for composers to notate the score as fully as possible, and gradually the ideology of the score emerged. Necessity of communication comes first; ideology later.'

One might be the reason behind this alteration in representational mode.[249] Since symbolic systems develop autonomously (thus justifying the variety in both linguistic script and formalised systems of musical representation) according to rules set by cultural variety, meaningful communication demands entirely different 'skills' from its users: the symbolic 'bank' of Japanese and Papuans familiar with WSN has been altered. They no longer share the same store of symbols with their monolingual and non-literate counterparts, who opt for pictorial methods instead of analogue forms: Results demonstrated that non-literates tended to provide responses in pictorial / abstract manner at a higher level than participants belonging to the same cultural group but were familiar with linguistic script. One question that might arise is how all visual manifestations of musical metaphors (as realized by Papua New Guineans and Kalash in 5.3) would be realized in this context. Blacking mentioned that since the forms of cultural patterns of expression are acquired through social relationships, the decisive style-forming factor in any attempt to express feeling in music must be its social content.

> If we want to find the basic organizing principles that affect the shapes and patterns of music, we must look beyond the cultural conventions of any century or society to the social situations in which they are applied to and to which they refer.[250]

Taking Blacking's words literally, we can come to some very interesting results regarding metaphors in the visual representation of music. If we define shape as a visual representation of cross-domain mapping between elements of cultural expression, then perhaps we could apply this definition to auditory perception in relation to music. I will primarily focus on the results obtained from Part II of the experimental procedure. For one specific group of visual stimuli presented to the participants as part of the forced choice experiment (Row I), I developed shapes based on a melodic pattern - the direction of the melodic line did play a crucial role in this process, but I focused primarily on uses of the specific sound pattern in

[249] Codal Interference implies that although the coding system may be common, varying socio-cultural norms may affect communication. It describes miscommunication between two counterparts when they lack the same socio-cultural norms.
[250] Blacking, J. (1973). University of Washington Press, p.73.

popular culture. The pattern in question is the following (Figure 66) rising and falling chromatic motif:

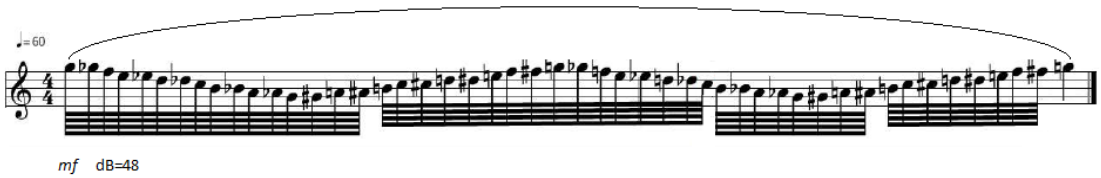
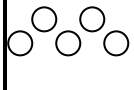
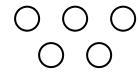
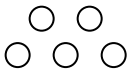


Figure 66: Chromatic motif

Participants from all groups focused their replies on a set of four shapes from the eight provided, as seen below in Table 31. Results are shown in order of category and not participant preference:

Table 31: Participant choices on chromatic pattern

British pilot				
	20% (5)	8% (2)	24% (6)	48% (12)
Japanese familiar with WSN				
	18% (4)	18% (4)	36% (8)	27% (6)
Japanese unfamiliar with WSN				
	37.8% (9)	16.8% (4)	25.2% (6)	21% (5)
Literate Papuans				
	26.6% (7)	3.8% (1)	45.6% (12)	15.2% (4)
Non-literate Papuans				
	15.9% (3)	21.2% (4)	47.7% (9)	15.9% (3)

All literate groups ignored responses that symbolized pitch alterations with dots such as  and its mirror image  as well as the vertical analogue representation of pitch  , with the exception of the British who saw it as another version of  . For that part, the British participants were the only ones who did not associate the chromatic pattern with the spiral shape  .

Let us focus on the shapes selected and to the ratios that these hold for each group: we see that the **W** shape (horizontal left-to-right representation of pitch against time) was the choice of almost half the British participants, one quarter for Japanese familiar with WSN, one fifth for those who were not, 15% for literate Papua New Guineans and not present for non-literate ones. Apart from the 'spring' and the circular motifs which featured highly in all groups, the vortex / spiral shape appeared only among the Japanese and the Papuans. It could be argued that UK participants have chosen a visual stimulus that reflects WSN. However, the selection of the spiral shape (1st option), as well as the the conical shape consisted of circles (3rd option) suggest that there is a pre-cultural perceptual mapping between them and the chromatic sound stimulus. The rising and falling chromatic motif has been overly used in western and Japanese popular culture. Let us compare results for a simpler stimulus in pitch variation consisted of a 4th downwards, followed by the same note, performed in staccato fashion by a flute as seen in Figure 67:

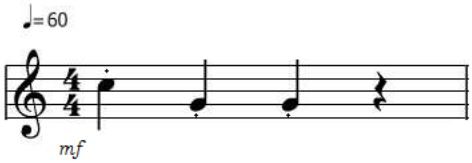
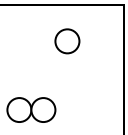
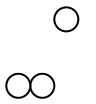
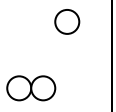


Figure 67: simple flute stimulus

Participants provided the following responses, as seen in Table 32 below:

Table 32: Participant responses for simple flute stimulus, in order of preference

	Participant group	1	2	3	4	5	6	7
A	British pilot							
		100% (25)						

B	Japanese familiar with WSN							
		95.5% (21)	4.5% (1)					
C	Japanese unfamiliar with WSN							
		79% (19)	4.2% (1)	4.2% (1)	4.2% (1)	4.2% (1)	4.2% (1)	
D	Literate Papuans							
		65.4% (17)	15.4% (4)	7.7% (2)	7.7% (2)	3.8% (1)		
E	Non-literate Papuans							
		21.0% (4)	21% (4)	15.8% (3)	15.8% (3)	15.8% (3)	5.3% (1)	5.3% (1)

I would like to draw the reader's attention to the following points:

i) All British participants and most of the Japanese participants familiar with WSN associated the sound symbolically with the separated circles (in a horizontal left-to-right fashion), most probably due to the nature of the sound stimulus and its possible similarity with the established method of indicating the staccato articulation in WSN.

ii) Japanese traditional musicians in their majority also made the same association – four out of five participants opted for the same symbolic representation. Although articulation is transmitted orally and not through the score, the markings for what would be considered as staccato, staccatissimo, marcato and portato are indicated through different symbols – particularly for the tzuzumi drums.

iii) Literate Papuans familiar with WSN selected the same symbols at a statistical majority, though at a lower percentage possibly due to the fact that WSN is not actively used in performance.

iv) No conclusive majority was formed for the BenaBena participants – indicating that staccato markings are not universally acceptable as indicators of this specific articulation. I have to mention here that participants were able to distinguish staccato from legato articulation, but, as demonstrated in Figure 53 they would not do so when left to portray sound stimuli on their own, thus producing relatively similar responses for pitch and duration variations.

Let us examine another stimulus from the forced-choice representation of pitch, representing a valley as in Figure 68:

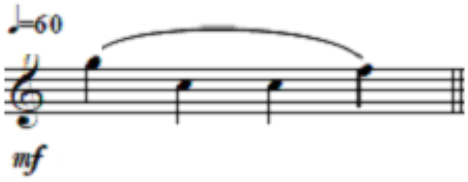
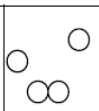
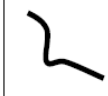
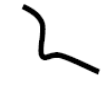


Figure 68: valley flute stimulus

Table 33: Participant responses for 'valley' flute stimulus, in order of preference

A	British pilot								
		72% (18)	20% (5)	4% (1)	4% (1)				
B	Japanese familiar with WSN								
		54% (12)	18% (4)	18% (4)	4.5% (1)	4.5% (1)			
C	Japanese unfamiliar with WSN								
		37.8% (9)	25.2% (6)	16.4% (4)	8.4% (2)	8.4% (2)	4.2% (1)		
D	Literate Papuans								
		42.3% (11)	19.2% (5)	15.4% (4)	11.5% (3)	7.7% (2)	3.8% (1)		
E	Non-literate Papuans								
		26.5% (5)	26.5% (5)	15.9% (3)	10.6% (2)	5.3% (1)	5.3% (1)	5.3% (1)	5.3% (1)

Although there is potentially useful information to be obtained by examining directionality and / or legato vs staccato representation, I would like to focus on the broad representation of a valley (**U)** shape through any means (lines or circles). This analysis shows the following:

UK participants selected U shapes at 100%; Japanese familiar with WSN at 95.5%; Japanese traditional musicians at 87%; literate Papua New Guineans at 88.5%. At the same time, the BenaBena non-literate participants selection of U shapes was a bit less than 50%.

Though there are minor differences among all groups, a most pronounced difference is between the BenaBena participants and the other groups; this may be justified as they are the only non-literate culture.

We can therefore conclude that the visual representation of music is not common among groups with few or no common denominators, and could hardly be considered universal. This and the previous examples are evidence of the effect of literacy, and codified systems in general on the visual perception of music: they lead participants away from pictorial representation systems into more codified forms of formalised visual representation in analogue forms.

5.6. The 'lost cause' for a universally accepted codified system

Directionality aside, a question that may arise is why have similar notational systems based on the visual axial analogy of time vs. parameter not having been created around the world, since the experiment results demonstrate such similarity between participant responses?

To begin with, the short musical phrases used as musical stimuli for the experimental procedure were created on the principle that they provided a good enough fit for all cultural settings that they would be exposed. As such, they could not demonstrate all such detail and information that define specific musical traits and characteristics for a solid definition of cultural stylistic references, such as major and minor triads for western music, eight-beat form for Noh music and syncopated drum patterns from the PNG highlanders.

Furthermore, as we have seen in Chapter 1, in order for a society to develop musical notation, literacy has to arise first. Even if literacy is developed, this does not necessarily mean that notation is next in the production line. Arab / Persian musicians did not produce a highly-specific notational system even if they were very capable of doing so. El-Mallah states that Arab music relies heavily on improvisation, which does not leave room for any written specifications; thus a possible explanation is that, similar to Jazz, possibly this particular style of music did not *need* a score to survive. Tablatures and / or alphabetic notation had been in circulation since the 9th century at least,[251] but as in many musical cultures they were primarily used as theoretical treatises and mnemonic aides and not primarily in performance. [252] Since Arab music is monophonic, learning through oral transmission was sufficient and an elaborate written musical notation system was not necessary. In addition to the rather simplistic tablature notation in use, theorists and performers developed a specialized music terminology that served their needs adequately.

To play devil's advocate for a moment, let us entertain the idea of a 'universal' codified system for music. In an effort to create an innovative way of communicating sounds through visual representation an attempt could be made to combine existing methods; this way a theoretical foundation describing the potential of sound as music and its symbolic extensions can be created, taking into consideration the needs of the music itself and the cultural sensitivities of its users. Nowak [253] presented a theoretical model for a Universal grammar which, if altered accordingly, could be

[251] In his Kitab al-Musiqa al-Kabir (The book on great music), Abū Nasr Muhammad al-Farabi, provided a lute fretting that combined the basic diatonic arrangement of Pythagorean intervals with additional frets suited for playing two newly introduced neutral, or microtonal, intervals. The *Al-Farabi* method of separating the octave in twenty-four equal divisions is still used in Arabic music. See Touma, Habib Hassan (1996): *The Music of the Arabs*. Trans. Laurie Schwartz. Portland, Oregon: Amadeus Press

[252] The Kitab al-Adwār is the first complete work on scientific music theory in the Middle East. It has been written by Safi-al-Din al-Urmawi in 1252. In his book, Safi-al-Din uses letters and numbers for the notation of melodies (a mixture of alphabetic – executive notation) while for rhythms he uses geometrical shapes (circles divided into pie slices). See Wright, O. (1978). *The Modal System of Arab and Persian Music AD 1250-1300.* Oxford University Press, Oxford, England.

[253] Nowak, M. (2000). The Evolutionary Biology of Language *Phil.Trans. R. Soc. Lond.* B 355, pp.1615-1622

used as a combinatorial model for the symbolic representation of music, as seen below:

$$R(Ra, Rb) = \frac{[(Ra \times fa) + (Rb \times fb)]}{2}$$

Where

Ra –Representational system A

Rb –Representational system B

fa - Population using system A

fb – Population using system B

We can see that the new representational system is a product of two existing systems, incorporating elements of both in proportion to the population using each system and is not creating something completely new, as is very common with modern attempts. The 'positive' traits of the use of such a system would be apparent: a unified representational model would offer new levels of communication between musicians from relatively different practices. The possibilities in terms of visualization would also be enhanced, as it is common with any system which incorporates new elements to assist it. The new system does not need to be overloaded with new symbols, as it would probably result in losing clarity more than gaining support. Perhaps the gradual introduction of new elements, similarly to the way that existing music notational models evolved in the first place, would suit any change in existing systems better by the method of differential 'fitness', or the opportunity for an element to be more or less suited to the environment than another. The goals of enhancing clarity and improving communication among musicians of different cultures, due to a logical and unambiguous structure accepted by all, would finally be a reality.

Although this system would seem to work fine in theory, history suggests that it would be doomed to fail. Similar attempts in creating artificial languages for various purposes by combining existing languages or developing new ones from zero (Esperanto, Lojban, and others) have met with very little success. Although the

former has been in circulation for over one hundred years, and despite its original aspirations to become a universal language, its users never exceeded a few hundred thousand. Throughout this chapter I have been making a case that society leads to high culture-specificity. Music, as well as language and all symbolic sign systems tend to be culture-bound. In order for Nowak's formula to work on notational systems, it would mean that the representational systems of sound incorporated should either be devoid of culture, or universally accepted. Since I have been following Nettl's (cultures are untranslatable) [254] and Blacking's rationale and approach[255] throughout this thesis, if such a system were possible it would have risen on its own out of musicians' need to enhance communication between them in the first place. It has not, and probably will hardly ever rise on its own.

The functionality and success of any communication model depends upon its usability. Since music and its visual representation have different roles in societies that use them, any combinatorial model of this sort would have limited success. Moreover, any introduction of a new element, such as a 'universally' accepted representational model, would not yield any benefit for indigenous music present among local performers of any traditional music. The common assumption is also that literacy of any form has been recognized not only as a modern development of vast importance in its own right but has also been linked with industrialization, political radicalism and revolution.[256] By literacy at this point it is meant not only basic reading skills, but 'literate behaviours' of sufficient level to carry out tasks of everyday life[257] that instill problem solving abilities. What we need though to ask ourselves is if we are confusing literacy with schooling / education in general, which might not incorporate the depiction of language or music into sounds. Scribner and Cole's study among the Vai has demonstrated that neither literacy in Vai script nor in

[254] Nettl's 'untranslatable' cultures of course echoes the Claude Lévi-Strauss idea that music and myth are analogous since both are intelligible but untranslatable, and while each takes specific forms in specific cultures, both have fundamental structural characteristics that particularly illuminate cognitive principles of order.
[255] Blacking approach as presented in How Musical is Man and as I understand it, is that on conducting cross-cultural research, we should aim to use common denominators and not artificial ones devoid of culture. Music is sound which is organised into socially and culturally accepted patterns.
[256] Graff, Harvey J (1987).*The Labyrinths of Literacy*. London: The Falmer Press p. 153
[257] Shirley Brice Heath, in Graff, Harvey J (1987). p. vii

Arabic produced what they considered to be the higher order intellectual skills[258] and could not be substituted for schooling. Would a Kalasha tribesman's drumming abilities be further enhanced if he acquired knowledge of a literacy system to demonstrate what he has been performing on the double drum since the age of ten? Would a BenaBena hunter play his flute at a higher level than his peers if he was taught music using a western score? Would his peers recognize his 'superior' playing skills as something positive, or as a detrimental factor breaking the homogeneity of the group? Would Noh performers play differently if they were non-literate in terms of alphabet and/or notation?

Although answering these questions may be relatively easy by now, sometimes the involvement of politics may alter established musical practices in ways that would not have happened by nature alone, and can affect rational thinking by the belief and illusion that western (European) arts and culture is superior.

5.7. The politics of symbolism

Through my fieldwork, I asked participants to create visual stimuli originating from the auditory stimuli, so that another member of their community would be able to make the link between the initial 'sound' message and their interpretation of it, without taking into any consideration the extraneous variable of sociological influence. In this section, I intend to demonstrate how a formalised method of symbolic musical communication may fail to arise, not as a result of inefficiency as a mode of coding music, but for sociological reasons. I will also indicate how sociological changes may come to affect, alter and replace coding systems continuously. I will presently examine how changes in society that affect musical practices may happen spontaneously, or are an outcome of political pressure to 'modernize' a country's profile. These changes may be separated into internal and

[258] Scribner, S. & Cole, M. (1981). *The Psychology of Literacy*. London: Harvard University Press, p.132

external.[259] *Internal* changes are those that may occur naturally in the form of adaptation to new situations or in response to public demand. Examples of internal changes can be considered the gradual evolution of WSN or the simplification of the Greek language diacritics by replacing the complex polytonic orthography (which notated Ancient Greek phonology) to a much simpler monotonic orthography, which corresponded to Modern Greek phonology. *External* changes are those that result from direct intervention of non-musical authorities, who come to manipulate these changes regardless of whether these are beneficial to the community or not. These external changes of non-musical authorities can turn cultural heritage into an instrument of power and misappropriate it to their own advantage, as I intend to demonstrate with the following examples below in two sections: directionality and politics, and the effect of ideological pressure.

5.7.1. Directionality and politics: Does it matter, and to whom?

The directionality of text, at least in language and sometimes in music, can be affected by politics. Abdurauf Fitrat (1886 – 1938) who served as Chief Minister of economics and education in the Bukharan People's Soviet Republic (part of the U.S.S.R.) asked the Russian musicologist Victor Uspensky to transcribe the Bukharan Shashmaqom.[260] Strangely, when the transcription was published in 1924, it did not include any lyrics. Uzbek historians argue that Fitrat did not include the lyrics because nearly all the poetry of the Shashmaqom was in Persian and since Farsi writing runs right to left, thus in the opposite direction of western standard notation that Uspensky was using, such a task would be impossible. However, there is also the view that Fitrat forbade their transcription based on other reasons, completely different from text-directionality. Although Uspensky had not given a

[259] During, J. (2005). Authority and Music in the cultures of Inner Asia. *Ethnomusicology Forum,* Vol. 14, No. 2, Music and Identity in Central Asia (Nov), pp. 143-164.

[260] Maqam is a term referring to a set of norms regulating sound material organization in the music of some of the Asian cultures. The Uzbek and Tajik maqams (makom) can be understood by means of the term Shashmakom (literary meaning six maqams) which refer to six large cyclic forms containing more than 250 instrumental and vocal-instrumental works. For a detailed analysis of the Shashmakom see Zeranska-Kominek, S., Kostrubiec, B., & Wierzejewska J. (1982). Universal Symbols in the Bukharan Shashmaqam. *Asian Music*, Vol. 14, No. 1, pp. 74-93.

justification as to why he did not include the texts in the 1924 published edition, he revealed much to his friend Viktor Beliaev in a letter (4 July, 1927) stating that Fitrat had not allowed him to write down the texts to the shashmaqam.[261] Alexander Djumaev suggests that the removal of the Tajik text was a deliberate act on Fitrat's side to replace the shashmaqam's original texts with others.[262] He had evidently not wanted to *'have a publication of 'Uzbek' Shashmaqam with 'Tajik' (Persian) texts, so that the forcible Uzbekization of the new nation could be carried out.'*[263] It is obvious that notation's reception, deployment and enhancement were first and foremost a sociological aspect just as literacy is. Therefore, a notational system's efficiency or inefficiency as a form of coding, as well as its dependence on society's ever altering viewpoints on it, may rely on factors completely irrelevant to musical qualities. If directionality was the only factor that hampered transcriptions of musical notation from the west to the east and vice versa, Ali Ufki (1610 -1675 A.D.), a Polish musician and diplomat in the service of the Ottoman Empire proved the exact opposite three centuries before:

Among Ufki's achievements was the release of two manuscript anthologies of Ottoman music containing sacred and secular pieces, instrumental vocal and art music as well as traditional Turkish songs. What's fascinating is that Ufki used Western standard notation moving *right-to-left*, as seen below in Figure 69:

[261] (Uspensky Archive, Vol. I, p. 120). Beliaev, as a researcher, was very upset about not publishing the maqam texts in the Uspensky edition. He found a copy of the original text in Bukhara in 1929 and understood the real cause of Fitrat's ban: nearly all of the texts of the manuscript were in Tajik Persian.

[262] Djumaev, A. (1993). Power Structures, Culture Policy, and Traditional Music in Soviet Central Asia. *Yearbook for Traditional Music*, Vol. 25, Musical Processes in Asia and Oceania, pp. 43-50.

[263] Levin, T. (1996). *The Hundred Thousand Fools of Gold: Musical Travels in Central Asia (and Queens, New York).* Indiana University Press, pp. 90-91.

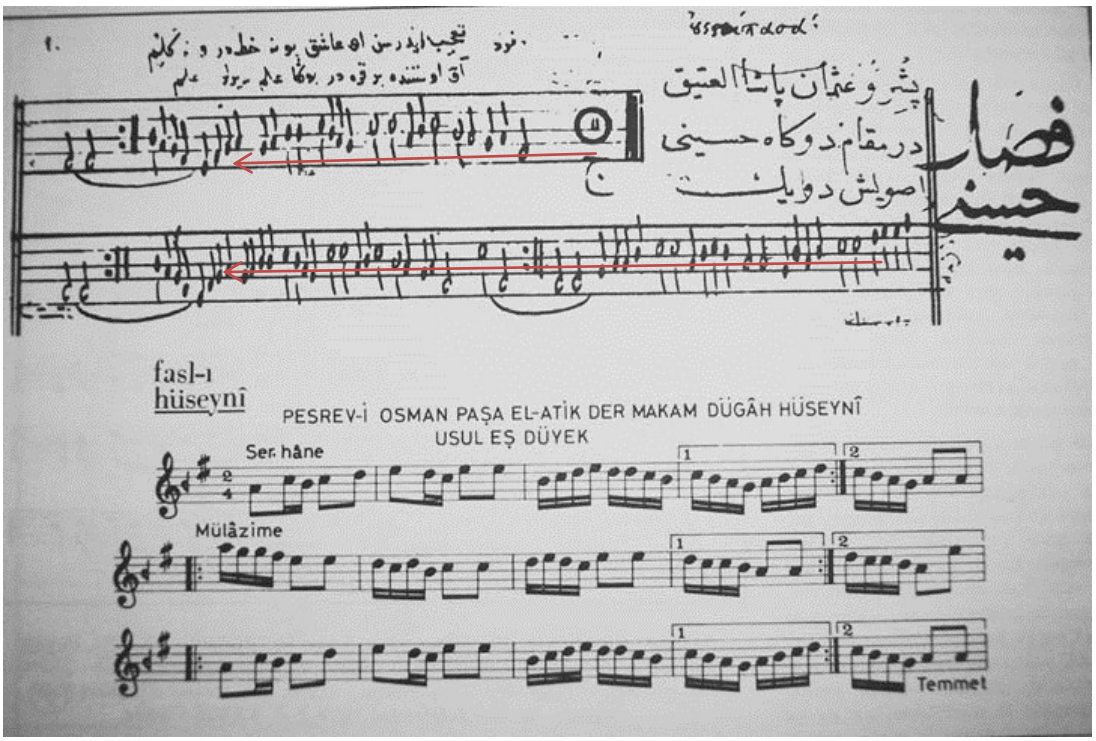


Figure 69: Ufki's notation on top, followed with a modern WSN transcription below [264]

My results equally suggested that directionality was not at the forefront. It did not seem to have an overly large effect as seen from performer responses on Part I and from the tables of Part 2 (seen in Chapter 3). There were minor differences between Japanese monolinguals and the rest of the groups, particularly for the forced choice selection of images, however these never exceeded half of the group population. It could be argued though that despite being active monolinguals, participants would have been well aware that left-to-right horizontal representation is possible, as would any society which is exposed to television, advertising, technology, and any other literate culture.

Had one of the participating groups originated from a culture where written language moves horizontally in right-to-left fashion, perhaps different results would have been obtained. The problem there would be to be able to locate musicians unfamiliar with notation. In Arabic countries, as well as Iran (Persia) and Pakistan WSN has been

[264] Güngör, Etem (1966). *Mecmûa-i Sâz ü Söz* (= Collection of Instrumental and Vocal Works). Türk Marşları, *Türk Kültürü Araştırma Enstitüsü Yayınları* 11 Ankara, p. 20; in Uludemir, Muammer (1985): Mecmua-i Saz-ı Söz'de Usulle *Musiki Mecmuası*, Aralık, pp.21-22.

imported, with written text being either i) at the bottom of the page ii) the next page, after the end of the notated piece in its original language (which would also mean that in order to learn a song accurately a tutor may be required), or iii) there is a Romanization of the text following the notation - most recent music editions have both.[265] It is obvious that when there is a will by musicians, they are more than happy to find ways to put existing systems to use, seemingly disregarding political connotations which others may want to associate with them. For their part, as long as communication is enhanced by adapting a specific tool to fit their needs, little else matters.

5.7.2. Ideological pressure as external change

During[266] tells us that for the U.S.S.R. the most striking transformations in Inner Asia (namely Uzbekistan and Tajikistan) have not come from the inside or from a straightforward process of acculturation, but from the outside under the pressure of colonial, socialist and nationalist ideologies. Censorship served to alter the musical heritage, as certain epics from nomadic cultures with historical themes influenced by animism were prohibited and Sufi and shamanic elements were expurgated from both popular and classical songs. The effect that this has had on musical intervals of traditional instruments of ethnic groups within the U.S.S.R's former boundaries is noteworthy: the Azerbaijani A half-flat disappeared in the 1930s or 1940s and sometimes turned into an A, sometimes an A flat. Uzbek and Tajik scales have suffered from the same slippage towards the tempered scale. Certain instruments (or musicians) have retained the old intervals in their frets: the scales of the dutôr and rabâb (whose status is less canonical) are tempered, while that of the tanbur is not. When the dutôr and tanbur are played together, the player compensates for the inequalities by playing with the left hand as well as by pulling and pushing the strings.

[265] See Zolfonoon Jalal (2007). *Setal Tutorial Vol.1 & 2.*
[266] During, J. (2005). *Ethnomusicology Forum,* Vol. 14, No. 2, Music and Identity in Central Asia (Nov), pp. 143-164.

Since a song's tune, as well as its words, is a symbol of identity, it is equally susceptible to the same kinds of manipulation. An example of this latter case is Turkey, for which the use of Roman characters to depict the Turkish language[267] was also accompanied by official attempts to redefine the intervals of the Ottoman makams so that they could be distanced from Arab and Persian intonation and brought closer to Western music. The father of the modern Turkish nation, Kemal Ataturk, in an interview with a German reporter stated: '*Turkish people don't have time to wait for four hundred years for their music to reach the level of Western music.*'[268] The newly established Turkish Republic began to transform or to close down existing musical institutions in order to create a *national* music by disposing the old Ottoman institutions and replacing them with their Republican equivalents. Monophonic music education (Ottoman music) was banned in public and private schools in 1927.[269] In 1934, traditional art music was banned from the radio stations for two years. Stokes tells us that: *'Unable to hear music that they enjoyed, people either turned off their sets...or tuned in to Egyptian radio.'*[270]

Undoubtedly, music, together with its written form and lyrics in the case of songs, is a composition of meanings, aesthetic traditions, and messages, which together refer to the establishment of a cultural identity. As suggested by Jean During, in their pursuit of command, non-musical authorities may use different elements from various cultural forms, remove them from their contexts and reprocess them in new contexts. The construction and alteration of Turkish folk music seems to be an epitome of this policy.[271]

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[267] See Gürçağlar, Şehnaz Tahir (2008). *The politics and poetics of translation in Turkey, 1923-1960*. Rodopi.

[268] Saygun, Adnan (1987). *Ataturk ve Musiki: O'nunla Birlikte, O'ndan Sonra* (Ataturk and Music: With Him and After Him). Ankara: Sevda Cenap Muzik Vakfi Yayinlari: 1, p.43.

[269] Tekelioglu, O. (2001). Modernizing Reforms and Turkish Music in the 1930s, *Turkish Studies*, Vol. 2, No.1 (Spring): pp.93-109, p.95.

[270] Stokes, M. (1992). *The Arabesk Debate: Music and Musicians in Modern Turkey*. New York: Oxford University Press, p.93.

[271] Degirmenci tells us that 'the process of constructing a cultural origin or heritage generally involves two elements. One is eliminating the differences and the other is reprocessing the 'differences' in folk forms in order to define them as a part of an imagined entity. Collections of folksongs and the political construction of the discourse of Turkish folk music from those 'inheritances' is an epitome of the second. Thousands of various music pieces collected from certain regions of Anatolia were put under the constructed categories of the institutions. The standardization and the categorization of folk forms in order to produce a 'safe' variety and difference involved, among others, Turkification of the lyrics and changing the rhythmic structure of the music in order to adjust it to the invented lyrics.'

Such changes are ongoing. In March 2010, prior to my fieldwork in Japan and Papua New Guinea, I had the opportunity to interview Dr. Kimho Ip,[272] Musical Curator at the Confucius Institute for Scotland, at the University of Edinburgh. Dr. Ip is a keen Yang-ch'in [273] performer, involved in the promotion of Chinese music and instrumentation to schools and the wider community affiliated to the Institute. It was due to Kimho's status as a performer that I was there to interview him for a research project involving notation, as he was the only musician I was familiar with that made use of Jianpu (a traditional Chinese numbered musical notation system, where numbers 1 to 7 correspond with the diatonic major scale) and Gongche notation.[274] Dr. Ip is a native of Hong Kong and it was there where he received his first Yang-ch'in lessons in Jianpu notation. He left home in 1997, and has remained abroad studying and working ever since. During this time, Hong Kong was annexed by China, where a major music reformation was already in effect: in an effort of modernization, as Dr. Ip stated, traditional systems of musical literacy were being discouraged and replaced by WSN. Although western standard notation was already in circulation in the past during Hong Kong's colonial era, it was confined to western music and musicians, as local folk performers still used their own notations. After this change, traditional systems were, of course, safeguarded as documents, whereas practising folk musicians were encouraged to learn and use WSN. As a result, now the numbers of practising traditional musicians who are able to read Jianpu notation are on the decline as new students are being taught in WSN, while practicing musicians able to read Gongche notation have become rare inside China.[275] On the other hand, the exact opposite is happening in Japan: Kawori Iguchi states that traditional music notation is very much in the centre of music education, following a government-assisted scheme to preserve its 'living tradition' more 'securely' and in a

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In Degirmenci, K. (2006). On the Pursuit of a Nation: The Construction of Folk and Folk Music in the Founding Decades of the Turkish Republic. *International Review of the Aesthetics and Sociology of Music*, Vol. 37, No. 1 (Jun), pp. 47-65.

[272] Dr. Kimho Ip is also president of IMAP (Intercultural Music and Arts Project). For the latest projects run by IMAP see http://www.boombax.com.br/imap/ (last accessed on November 26th, 2011).

[273] A trapezoidal Chinese hammered dulcimer, originally from Middle East and modern-day Iran. Its name stands for 'foreign zither'.

[274] For more information on both systems see Lieberman F. (1979). *Chinese Music: An Annotated Bibliography,* 2nd ed. New York: Garland.

[275] This is anecdotal evidence. Such comments have to be treated with considerable scepticism, as no survey has been carried out.

more ‘accurate’ form.[276] My personal experience from the Kyoto City University of the Arts, and Tokyo’s Geijutsu Daigaku has left me convinced that the future of Japanese traditional notation systems is secured: not only was it taught by traditional Noh theatre performers, it was well incorporated into the academia.

The examples of Turkey and the Union of Soviet Socialist Republics indicate two different sides of the same coin: society’s positive and negative effects on notation systems, unrelated to their musicological qualities as such. A system’s survival after all, is not only based on its usability by performers, but also on social and political circumstances and change. In this manner, Japanese notation seems to have a bright future since it has secured political patrons and social safeguarding as an element of traditional culture.

Altering cultural norms of musical practices through pressure to modernize society, can lead to different perspectives on notation’s reasons of existence. The disappearance of Guqin and Jianpu notations in China do not result from their imperfections as systems of (meaningful) communication; in China’s effort to modernize its outward appearance, these elements of cultural identity need to be sacrificed in order to achieve a ‘higher’ standard of communication among musicians. In the process, they have been transformed from a system of everyday use into a library artifact.

[276] Kawori, Iguchi. (2008). Reading Music/Playing Music: The Musical Notations of the Kyoto Gion Festival and the Noh Flute. *Ethnomusicology Forum* Vol. 17, No. 2, November, pp. 249-268.

5.8. Social Implications – some concluding remarks

In order for an idea to become desirable to the population, it needs to find a suitable hold and acquire meaning in the new environment. Depending on the existing social situations, ideas such as a new way to portray music may either be readily accepted or sternly dismissed. It would seem that responses to outward change depend on the practitioners' attitude towards these changes.

For my part, introducing the concept of the visual representation of music to a Papua New Guinean tribe, though beneficial to the 'outside world' in terms of obtaining valuable results by watching the former interact with this idea, had little to offer to the tribe itself. The BenaBena performed music long before I got there, and continue to do so without written components. The novelty I have established with my examples, using Philip Tagg's framework, is that when an emitter and a receiver do not share the same code of symbols, meaningful communication is impossible. For non-literate BenaBena who preferred pictorial/abstract-pictorial methods of representing the sound stimuli, this means that a symbolic system of reference, accepted by all, would have had to be agreed on. This is a process that took decades and centuries in the Western World and has been under constant review by people in the 'industry' who used it on daily basis across tens of countries. Apart from that, there is not as much motivation for such a task among the BenaBena as expected, since if they wished to it would be far easier for them to use audio technology to record their songs rather than transcribe them. Versatility and practicality in a socio-cultural phenomenon such as a highly specified symbolic system of musical communication is granted by the passage of time – which technological innovation has already overtaken. Mobile phones have already started making their appearance in the Eastern Highlands; it will only be a matter of time before more advanced forms of technological equipment reach the tribe.

I also hope that with the examples and material presented in this chapter, I have noted the importance of existing formalised symbolic systems of musical communication such as musical notation, as its effect, together with linguistic

literacy, appears to be defining the relation between music and its two-dimensional form as either iconic or symbolic.

Apart from my empirical investigation, there are cases from the bibliography where the introduction of highly formalised symbolic system of depicting musical information (in this case, WSN) has influenced musical performance: El-Mallah examined the history of music notation in the Arab world and argued that the unquestioned use of WSN since the second half on the 19th - early 20th century has had a negative effect on the structure and performance of Arab music.[277] The introduction of WSN to Arab music seemed to limit improvisational skills and ornamentation, characteristics that were (and still are) considered to be a trademark for Middle-Eastern music in general. WSN, in result, did not seem to have a positive effect on the local culture, since it changed the structure and substance of Arab music. It is noteworthy to say that El-Mallah's approach to WSN in not overtly negative – his aim is *'to sharpen the critical consciousness of those who use it'*.[278] Perhaps in the pursuit of musical communication, these sacrifices were deemed necessary by musicians at the time, and perhaps future generations of BenaBena will consider such changes necessary in order to safeguard their musical tradition.

I hope to have demonstrated how the visual representation of music could be attributed to social factors as well as pragmatic ones. The efficiency of any formalised directive system using symbols, apart from its completeness with which it 'describes' required sounds or actions, it has to be compatible with the society that uses it in order to enhance its probabilities of establishment and survival in the long run, unless it is enforced by a non-musical authority. Changes in modes of communication, whether it is adopting a new encoding system or replacing one with another, are the product of new social and cultural balances and have a high impact on the culture of populations that adopt them.

[277] El-Mallah, Issam (1997). *Arab Music and Musical Notation.* Tutzing: H. Schneider.
[278] El-Mallah, Issam (1997). p. 348.

Chapter 6 – Conclusion, limitations and further research possibilities

A brief summary

It is common for musicologists who have been molded in Western civilisation, to assume that any 'real' comprehension of any art form, music or otherwise, is based on understanding in a structured manner. Some of our most modern explanations of what defines music include notions of organisation (i.e. 'music is organised sound').[279] As this thesis portrays, regardless of our background, our attitude and response to music (visually on graph paper or otherwise) depends on its comprehension through the filter of cultural relativity and perspective. This perspective may lead us to depict visual information in two-dimensional form using formalised systems of symbolic nature, imitating or directly referencing musical notation, or (in case where linguistic or musical literacy is not established) adopt freer interpretations.

In this thesis, I tried to understand musical culture outside my own narrow perspective. What intrigued me and motivated me was the fact that although I might have been trained in Western music and be epistemologically perhaps more aware of musical formulas, the essence of ethnomusicology suggested that I would never be able to grasp what a Japanese traditional music player, or a native Papuan would be trying to convey while performing his/her own music by instinct, and then depicting it on a two-dimensional form for his/her peers to see. However, by working closely with my participants, I tried to overcome such difficulties. The main focus of my fieldwork was, accordingly, to explore my participants' cultural perspectives and intellectual mindsets that influenced their logic of how to represent musical sound.

I took into consideration cognitive aspects that were bound to have major impact on this representation such as linguistic literacy, perception of time, shape and pictures.

[279] Goldman, R. F (1961). Varèse: Ionisation; Density 21.5; Intégrales; Octandre; Hyperprism; Poème Electronique. Instrumentalists, cond. Robert Craft. Columbia MS 6146 (stereo) in Reviews of Records. *Musical Quarterly* 47, no. 1. (January), pp.133–34.

I delved into local musical cultures, attempting to discover the modes of musical communication and to determine the role of visual information where it existed. For the cases that it did not exist, as was the case of my informants in the BenaBena hamlets in Papua New Guinea, on my persistence entire villages came together to decide upon visual modes of communication before taking part in my research, thus proving how serious the matter of transmitting information was for them, even if the task in itself was not of prime importance for the community as such (tribal warfare somehow seemed more pressing than agreeing upon which signs were to be used to represent sound variances). It was actions such as these that I consider the key to re-conceptualising how visual representation is shaped: not by cognition alone, but by culture, used as a means of enhancing and instigating communication, finding a common ground where there is none, deploying the most well-walked path out of a number of infinite possibilities.

6.1. Communication: an act of culture

I would like to remind the reader of the intermediate research questions set out before the fieldwork was carried out. The first question was '*how non-Western music literate / non-literate performers engage with the textual representation of music (in relation to their culture)?'* The second was: '*To what extent does musical representation exhibit culture-specific traits, and to what extent does it depend on underlying universal principles?'*

For the first question, this research suggests that apart from a small minority, non-Western literate performers engage with the textual representation of music in similar fashion to their western colleagues, but for different sociological reasons. The template used is H-ltr analogue representation.

What is the importance of seeking the templates with which we visualize music? In my opinion, cultural and musical comprehension can also be found in the symbolic world, apart from the sonic. The very nature of music, as I argued in the previous section, is its comprehension within a cultural context, as it is an element of nurture

rather than nature. Therefore, all templates employed to visualize music contain aspects of culture, which would justify why I have also examined musical notation and its impact on the relation between music and its visual representation.. As the reader may attest, the systematic empirical study I presented in Chapter Three would be void of meaning without the qualitative fieldwork based on observation and interviews carried out afterwards on location, (Chapter Four) in the sense that any method of representation chosen by participants would matter little, had I not presented a thorough analysis of the way existing tools of musical communication are used through the symbolic interaction template. It is noticeable that the majority of literate participants did opt for one specific method of representation in the free-drawing paradigm: analogue, linear representation (x-y axial representation, with time located on the x axis and variable parameter on the y axis) prevailed in over 90% of responses. This feedback is a mirror of existing cultural practices that represent written language in a horizontal, left-to-right manner. When this cultural norm was altered (among Japanese musicians, or non-literate participants) it was observable that the first provided an idiosyncratic analogue pictorial representation (axial time indication, variable parameter represented pictorially) and the latter favoured an abstract-pictorial (non-axial representation). In the forced-choice representation of attack rate, these informants opted for vertical responses.

This draws us to the second, more challenging question: '*To what extent does musical representation exhibit culture-specific traits, and to what extent does it depend on underlying universal principles?'* The influence of western culture makes it very difficult to draw concise results; after examining the case of the BenaBena, and the small minority of Japanese traditional musicians, the claim could be made that musical representation exhibits culture-specific traits. On the other hand, based on responses from the forced-choice design, specific pre-determined shapes and patterns seemed to appeal better to participants regardless of their originating culture. I attempted to decode the relation between music and its visual forms, no matter if these were called notational systems or abstract shapes by their users. Underlying universal principles are very hard to be recognised as such, as the impact of western culture makes such an investigation very challenging. However, noticing and

addressing the majority of differences in methods of representation across groups and making sense of them is easier than justifying the minority of similarities among responses unrelated to western cultural influence. As my main scope was to investigate the visual representation of music in a cross-cultural perspective, and further demonstrate that musical representation is related to our understanding and deployment of symbolic meanings, these small, unjustifiable commonalities across groups could potentially hold the key to the question of whether there are indeed genuinely common iconic perceptions of music across cultures. Should symbolic communication be solely based on cognition, visual manifestations of sound would probably appear identical - the only difference would perhaps be varying sensory motor skills based on age or other extra-musical parameters.

I hope that the reader has understood that in order to establish symbolism in music, an active cultural link between society and the users of formalised systems of symbolic nature needs to be first created, and then maintained. This suggests that the broad common ground found across groups is due to the impact of existing symbolic systems of literacy and musical notation.

Of course, a possibility which I had no means of testing should not be ruled out: that language literacy affects cognition, but not perception. In extent, musical literacy and training may also affect musical cognition, something that Mats Küssner is currently investigating for his doctorate thesis at King's College London, examining differences in musical representation on a free-drawing paradigm between British musicians and non-musicians.[280] His preliminary results indeed point towards that direction. This in effect brings me to discuss the limitations of my work.

6.2. Limitations in Perspective

In the preceding chapters I have provided ample evidence that communication is as much affected by our innate perception as by our culture, which in turn, is manifested through symbols used in society. Even if I was intent on conducting field

[280] Küssner, M., Prior, H., Gold, N., & Leech-Wilkinson, D. (2012). p.121.

research among non-western participants and did my best to envisage what these informants would do on graph paper, due to my existing cultural background I was still grounded by such devices as the Western notation system which attempts to serve as an all-comprehending analytical system and a basic point of reference for understanding all musical styles. I could not evade the feeling that any new method of visual representation being presented to me was subconsciously compared with my pre-existing knowledge of representing music through a highly organised symbolic system such as WSN. Although I took preparatory courses at the Department of Social Anthropology of the University of Edinburgh, it was only when I accepted that cultures are effectively untranslatable in the fullest sense, that I understood that what I was receiving as data from my participants (particularly among the BenaBena) was a credible, valid attempt of communication.

As I was willing to discover the diversity of visual communication templates, I highly appreciated the imperfect explanations and translations of these sign-systems by my guides in Papua New Guinea and Japan in the qualitative interviews and I hope to have adequately shown that culture is the factor that gives shape to our musical listening and depiction of musical sound. I considered it a crucial point to avoid making cross-cultural comparisons regarding usability of these templates from a western perspective. Accordingly, comparisons originating from a western perspective would be not only unjust, but potentially wrong. The fact that patterns and permutations of non-western musical symbolism may seem simplistic when put next to what we perceive as our elaborate systems of symbolic musical communication, does not mean that these are lacking in any way; they are meant to fulfil the task of enhancing communication among members of a specific community. Therefore, as specific musical qualities of non-western iconic and symbolic communication systems may evade casual inspection, it is only through qualitative data obtained through interviews and tactful observation that quantitative information receives meaning.

6.3. Limitations of the findings and the issue of cultural sensitivity

6.3.1. Reflection on the limitations imposed by language

I would like to discuss limitations imposed by the design of the investigation as well as fieldwork-related problems that had an effect on the research. Initially, it was the language barrier that proved detrimental to the fieldwork. As I was not a speaker of Japanese or Tok Pisin / BenaBena, I followed Jaap Kunst's blueprint for conducting fieldwork research into cultures and populations whose language the researcher has no command of.[281] I learnt a number of set-phrases in order to communicate with participants in an encouraging way and make them feel at ease, as well as ensuring that the ethical parameters set out prior to the investigation were maintained. This was perhaps the most valuable time I spent preparing for the fieldwork, as people taking part in the investigation showed a much more favourable and positive attitude towards the tasks that I was asking them to fulfil for my work. A smile and an encouraging word in their own language at the right time would gain instant motivation and friendliness among both Japanese and Papua New Guineans, as well as the translations provided by my guides ensured that participants were fully aware of the goals of the research, and their role in it, and their rights.

6.3.2. Reflections of the limitations on the parameters of investigation and the experimental design

Concerning the parameters of the investigation, I was forced to make some compromises in order to be able to obtain results in diverse social conditions. The BenaBena community I was interviewing in Papua New Guinea was involved in a tribal conflict. Therefore, trying to maintain my participants' interest in my research was a very difficult task, as they had more pressing matters to attend to. The villagers were more concerned whether their tribal enemies would poison the river, or

[281] Kunst, J. (1955), p.22.

organise a foray rather than think about how to represent music through graphic means. I was fortunate enough, though, that before I went to the Eastern Highlands, the anthropologist Lewis Langness had spent nearly a decade among the BenaBena between 1960 and 1970 and visited frequently afterwards; so, my arrival and my questions were not completely new to them. In order to create and maintain the community's interest in my work, I did not stop participants from openly discussing their written representations of musical sound among themselves before and after they took part in the investigation. I could not and did not want to isolate participants from their peers. The first reason encouraging this approach is that it would have caused agitation among them and frustration towards me. Music and music-making is a collaborative social activity, so if I tried to impose isolation on participants while they were engaged in solving what they considered to be 'music questions' it would cause strife. The second and principal reason however, was that since the investigation directives called for them to 'represent sounds so that if another member of their community saw their marks, they should be able to associate them to the sounds,' this in itself suggested that participants had to reach some sort of agreement in their representation techniques. Since carefully monitored stable conditions were impossible to maintain due to the environmental and sociological setting, I aimed at gaining data that would reveal what the BenaBena as a collective unit would try to come up with in order to achieve musical communication visually. As such, the results presented here should be seen as a **BenaBena** non-literate response primarily, and then as a **non-literate** BenaBena response. I believe that, if I had extended this investigation to include another non-literate community from sub-Saharan Africa, or Central Asia, I would have received different results. Therefore, my results should be viewed to represent the BenaBena, and not all non-literate populations around the world.

In order to improve the integrity of the results from the BenaBena community as to one participant per response, I devised various tactics to deal with non-participating tribe members who were present when their peers were taking the tests. These tactics were dependent on the non-participants' number: if it was just one, I would invite them to take the test, provided that they did not talk to each other; this approach had

moderate success, as participants would often argue among themselves or with my guide about their responses, either debating that one person had produced a more 'accurate' response than the other, (which I permitted them to do freely, provided that they did not alter their signs), or asking my guide or me to show them a way to provide the responses, (which I predicted would happen, so I had already instructed my translator not to give them any hint or direction, and carried out the forced-choice investigation only after they had provided responses for the free-drawing investigation). If the onlookers were three to five individuals, I would give them other tasks such as drawing on paper anything they wished, or to think about their own responses by tracing them out on the earth. This approach proved the best solution in the long term, as participants were left in relative peace and the onlookers would also gain experience in using a pen (a few tribe members had never used any writing instruments). Furthermore, it initiated discussion and maintained everyone's interest. On two occasions, when a large crowd had gathered and it seemed impossible for the participants to continue without any distractions, I had to stop in the middle of the investigation and carry out ethnographic research, which was more inclusive for anyone present.

In the introduction I already mentioned that my method is not result-driven at the cost of ecological validity. I have to stress that this was not a lab experiment. It was a cross-cultural ethnographic fieldwork-based study following an ethno-musicological approach, that aimed at maintaining cultural sensitivity towards all participants (despite the fact that I was using technological equipment), who by the end I saw as equal contributors to my investigation. As far as cultural sensitivity is concerned, perhaps my biggest challenge was to come up with the forced-choice visual stimuli. These 'invented' symbolic representations, being of my own design, were not as objective as possible as they reflect a western perspective; however, Japanese and literate Papua New Guinean participants did not reject them (with the exception of IK, the tsuzumi Master presented in 4.7.3). The only divergence was the BenaBena on attack rate. Seemingly, the majority of the tribe came to an understanding to symbolically represent any drum sound with spherical shapes, linking the sound of the musical stimuli to the physical appearance of the object creating them. When

they did not see any such shapes in the forced-choice examples, most of them refused to take part in the procedure, or seemed to pick responses at random. I wonder if an investigator with a different cultural background would be able to create visual stimuli to which the BenaBena might respond in a more positive manner – probably yes, particularly if those visual stimuli actually come from the BenaBena themselves. In my visual stimuli, variations in pitch did not test horizontal versus vertical directionality, but only horizontal left/right and right/left directionality, as no analogue vertical system of representation exists. Furthermore, had I produced examples of visual stimuli depicting analogue representations moving vertically along the page, they would have been dismissed by western participants as they are already familiar with the idea of analogue representation, giving them an unfair advantage over participants from Japan and Papua New Guinea. Also, since I tested horizontal versus vertical directionality with the forced-choice representation of attack rate, I opted for testing whether participants would perceive staccato and legato techniques to require a different mode of representation. The fact that my symbolic system (lines for legato articulation, dots for staccato articulation) was picked up by the majority of western and western-trained musicians, as well as a few of the traditional Japanese and literate Papuans, and very few of the BenaBena musicians, allows for various interpretations. Either representing articulation is not the prime objective among the last three communities, or my choice of symbolic representation was based on the assumption that legato articulation assumes a linear shape, whereas staccato articulation does not. Results from the latest research projects from Helen Prior at the Centre of Music Performance as Creative Practice suggest that the association of music and shapes may diverge cross-culturally, despite the fact that the Centre researchers have based these results on western participants responding to predominantly western musical stimuli so far. Although the absence of inferential statistics might not permit any robust conclusions being drawn from the quantitative data, they still suggest that non-literate participants would not readily cross-domain map from sound to shape, and if they do, they would not adopt a linear symbolic-analogue model, with time represented horizontally. Therefore, it is worth considering whether mapping from sound to shape is heavily dependent on literacy.

6.3.3. Reflection on the limitations imposed by logistics

Another difficultly was that the experimental design demanded some logistical calculations. Regarding the fieldwork investigation, I required a stable power supply to charge my equipment: an mp3 player with integrated speakers, a handheld camera, a voice-recorder and a small laptop which I used for backing-up files. This did not pose any problems in the United Kingdom, Port Moresby (P.N.G.) or Japan. However, among the BenaBena villages, where electricity is not readily available, it proved difficult to make sure that I had my camera, voice-recorder and mp3 player charged, which I did with a solar charger I had bought in Japan. On a few occasions when my interviews were interrupted (on one occasion due to a scouting war-party from a neighbouring tribe, on two others because my participants simply could not agree on how to represent the sound stimuli and a large crowd of onlookers had gathered, who also joined in on the argument) I had to remain calm and try to conserve batteries on all occasions, with a guilty conscience as I did not know when the next bit of important information might come up. Energy conservation aside, materials were also to be considered: graph paper is simply nowhere to be found in Papua New Guinea, even in Port Moresby; it was rather fortunate that I had purchased large amounts of graph paper in Japan.

Budget limitations also meant that my fieldwork stays could not be long in duration - two months at each site is usually considered below minimum in order to gain any 'insider' knowledge. However, finances did not permit a longer stay. For this reason, before arriving at any fieldwork location, I spent many months preparing for my stay on each separate site, establishing contacts and making sure that gaining access to informants would be as fast and 'accurate' as possible. At the same time I also compiled a bibliography (there is extensive literature on Japanese traditional music, but it is relatively limited for the BenaBena), and attended relevant courses offered by the University of Edinburgh department of Anthropology that provided insights into qualitative research methods for ethnographic fieldwork investigation. These preparations were done so as to be able to obtain satisfactory results during my visits to the sites, and ensure that I conducted my investigation with ethical integrity: I

recorded participant opinions on the subject of visually representing music in a symbolic form on paper, and presented them here alongside bibliography reports where these were available. On occasion I had a go at playing music together with the participants, as this was the most effective way of getting them to relax. Jaap Kunst and Bruno Nettl would be delighted to know that some of their methods in the field still work miracles some sixty years after they suggested them.

6.3.4. The issue of safety and expenses

Although the safety of the investigation was addressed prior to the fieldwork taking place, some may still consider Papua New Guinea a relatively 'dangerous' fieldwork site. There is constant tribal fighting among neighbouring tribes such as the BenaBena and the Glopa, but it is not as random as I thought; tribes usually reach an agreement as to when and where the fighting is to take place, and usually choose a mountain ledge to settle conflicts. The two tribes stand opposite each other and work themselves into frenzy before exchanging a torrent of bullets, arrows and javelins. The fighting stops momentarily for the injured and dead to be gathered and taken away, and resumes with equal ferocity until nightfall. Ambushes do occur, but, at least in the Eastern Highlands province, they are frowned upon. As for Port Moresby, it was ranked third in the 2011 Economist list for the most dangerous cities in the world. In 2004 it was ranked first. My own personal safety was always guaranteed by my hosting BenaBena, and by my local contacts in Port Moresby. I was never left out of sight, I was always provided with an armed escort every time I went around the different hamlets or into Goroka, the neighbouring town, or downtown Port Moresby and the settlements around it. Wherever I went I was met by friendliness and hospitality. People seemed to be as intrigued by me as I was by them, giving me cigarettes rolled in newspaper, pineapples, bananas and sweet potatoes. Although Papua New Guinea has an average daily income of about £1 per day, making it one of the poorest countries on the planet, I never saw any individual go hungry especially among the rural tribes, or anyone considered 'poor' by their own standards. There were and are famines and bad crop years, that are indeed

devastating of course, but then everyone goes without food because there is no food to share. I stayed among the local people in the towns and villages, ate what they offered me and slept in their homes, and no one ever asked me for any financial compensation. In return, as compensation for their time, which was also an aspect considered prior to my fieldwork investigation during the planning stage and ethics form, I was advised by Professor Motsy and Professor Jonerhaggt not to give anyone money - in return I gave the participants in Port Moresby music notebooks, cokes and cigarettes. To the BenaBena I gave them kitchen utensils, candy, coloured pencils, flashlights, and when I left I handed them my solar charger, which made them very happy indeed as they would be able to use their mobile phones. My stay in Japan was a financial nightmare; in order to minimize costs I stayed in a capsule hotel. My 'room' was one meter wide by one meter high by two meters long. I could not sit up on my bed without hitting my head on the top bunk-bed, and all for the price of £25 per day, without food. Traditional musicians did not want to receive payment. Instead, they asked for an *Orei,* which is basically money in an envelope to an amount that was at least £30 for approximately one hour of their time – an amount which was covered more than once by Professor Fujita, as I could not afford it. On one occasion, even this amount was considered too low and I could not proceed with the planned interview. But all was not so bleak; in Tokyo, where most of my participants were university students, I was advised by the members of staff to offer them traditional sweets at the end of the interviews. On my visit to a retirement home in Tokyo again, I was advised to bring sweets and one bottle of sake. In the United Kingdom where a financial compensation to experiment participants is far more common, I offered a compensation of £7 per hour. Personal safety was an issue neither in Japan nor the United Kingdom to the point that it would influence my investigation.

6.4. Further Research Possibilities

In my doctoral thesis I noted that similarities between certain aspects of my participants' responses, such as the concordant depiction of sound with an x-y axial

representation, with time located on x axis and variable parameter on y axis, suggest that there are underlying commonalities in the manner of musical representation, particularly among literate participants of any cultural background. At the same time, the overall variety of these responses suggests that the association between music and its visual representation (when it takes place) is strongly affected by ever-altering socio-cultural parameters. However, in order to verify whether there are indeed universal traits in music representation or whether cultural parameters direct the association between music and its representation, there are still many issues worthwhile for further investigation.

One such project could be to engage monolingual performers of music originating from a background where literacy script moves in a right-to-left horizontal fashion. If participants originating from such a cultural background produce visual representations of musical stimuli in a horizontal, left-to-right manner, then these results would suggest the existence of underlying universal traits in music representation. If their responses are depicted in a horizontal, right-to-left manner, this would support the view that cultural specificity alone defines musical representation in free drawing tasks. Naturally, the necessity to find participants with a minimal exposure to western culture would make fieldwork in a remote non-western environment a vital part of this research. As exposure to Western culture affects the performer's way of thinking (as seen by results from the literate Papua New Guineans), participants would ideally be located and studied far afield in their own environment. Non-literate members of the participating communities would also take part in the study in order to verify whether the data obtained from the non-literate performers of the BenaBena tribe in Papua New Guinea only apply to them, as I indicate in the previous sections, or are widely observable in other non-literate cultures as well. Experimental parameters such as the sound stimuli would also have to be modified so as to make these stimuli culturally sensitive to the communities in question. However, as western script may have already reached participants of the most remote regions through packaging, advertising and technology, among others, it may indeed difficult to conduct such research, if not already too late.

Another line of investigation would be to examine whether participants from any of the original groups (British, Japanese and Papua New Guineans) are able to link images created by other groups to their own representative musical stimuli. Although I carried out a small-scale investigation into this with the British participants, it was at a preliminary and rather rudimentary level. Concise measurements were not taken. They were fully capable of identifying responses among their peers, in similar fashion to Japanese or literate Papua New Guineans, or any responses from these groups that followed the horizontal left-to-right invented analogue notational pattern. Nevertheless, they were not able to provide definite results for representations that did not match this style of depiction. As for the BenaBena, it would seem that only those who had followed the circle – line pattern in their responses for the drum/flute differentiation were able to provide positive feedback. I did not demonstrate to them the horizontal left-to-right analogue method of the small minority that provided such results, as these were the product of participants who seemed to have arrived at this mode of representation out of individual inspiration, and not out of collaborative effort.

6.5. Final Conclusions

The field of music and its visual representation through shapes or symbols is entirely new; it is only in the last ten years that serious scientific investigation in this field has been carried out, none of which crosses cultures. My qualitative and empirical results offer an integrated account of cross-cultural music perception within an ethnographic setting. As this work is the first cross-cultural investigation deploying a free-drawing paradigm, it could function as a methodological guideline for other researchers, and open up new avenues for exploring universals in the visual depiction of sound. The issue of music universals, and concepts of musical space in particular which I have been dealing with, are fundamental to our comprehension of music perception and cognition. I hope that this work has the potential to enhance our understanding of the cognitive processes activated by musical listening and possibly provide further insight into the cognitive links between music and the other senses.

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